

MINING WORLD

SEPTEMBER, 1954

VOL. 32 No. 10

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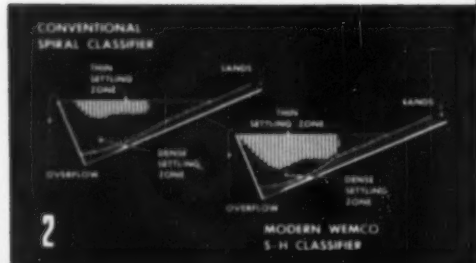
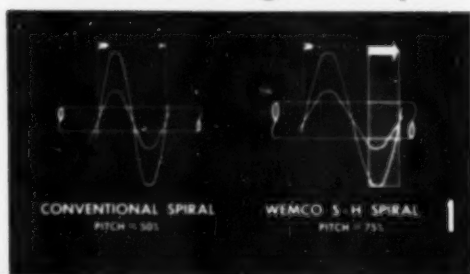
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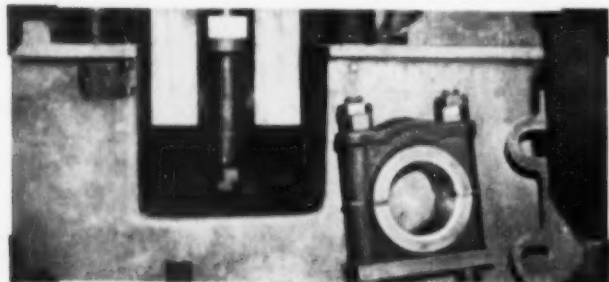
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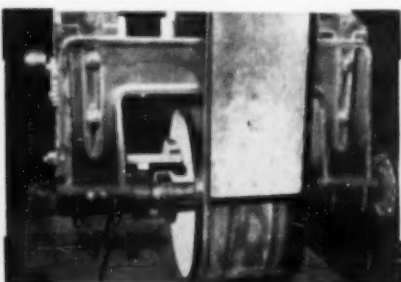
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LUBRICANT	CALOL Red Engine Oils X
UNIT	Industrial bearings-sawmill
LUBRICATOR	All types of oilers
CONDITIONS	High pressures + temp. - Intermittent loads
PERIOD	1 1/2 years
FIRM	Darrington Mill, Inc., Darrington, Wash.

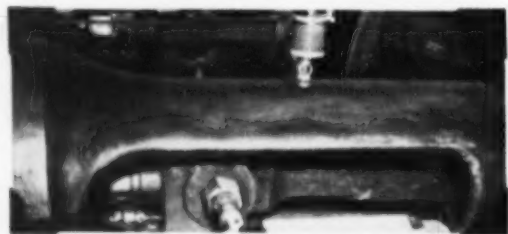
Bearing maintenance cut 50 per cent!



COMPOUNDED RED ENGINE OIL 26X in sash gang-saw con-rod bearings (above), arbor bearings (right) and other industrial bearings, practically eliminated wear adjustments, materially reduced leakage and consumption. Mr. Ed Doran of Darrington



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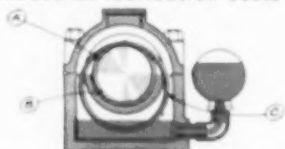
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GRAB SAMPLES From the Mail

Absolutely Correct

Sir:

In reference to the June, 1950 issue of MINING WORLD, I saw Mr. Waldron's exp. parked in front of the Miner's Union Hall in Butte, Montana. The license number is ————

Marcus Daly Proett
Mary Ingaber Mine
Whitehall, Montana.

June Issue . . . Collector's Item

Dear Sir:

The article "Round Mountain Gold" which appeared in the June 1950 issue of MINING WORLD is of particular interest to me and associate members in this company. I will appreciate it greatly if you will send six reprints of this article "Round Mountain Gold."

Yours very truly,
T. M. Patten
General Superintendent,
SILAS MASON COMPANY
Grand Island, Nebraska

THE REPRINTS HAVE BEEN FORWARDED TO MR. PATTEN AND SO GREAT HAS BEEN THE DEMAND FOR COPIES OF THE JUNE ISSUE OF MINING WORLD—MANY REQUESTS FOR 50 OR MORE—THAT THE ISSUE IS RAPIDLY BECOMING A COLLECTOR'S ITEM.—ED.

Very Much in Business

Dear Sir:

You have an article in your June issue on "Phillipsburg Manganese" which states that the Taylor Knapp Company produces the "only battery grade manganese in the United States."

We are pleased to take exception to this statement as our Company is "very much" in business producing battery grade concentrates both for Government stock piling and for sale to battery manufacturers.

L. B. Manning
Manager
TROUT MINING DIVISION
American Machine and Metals, Inc.
Phillipsburg, Montana

MINING WORLD IS PLEASED TO REPORT THAT THE TROUT MINING DIVISION IS VERY MUCH IN THE MANGANESE BUSINESS AND HAS "FURNISHED 35 PERCENT OF THE TOTAL MATERIAL STOCKPILE FOR THE WAR EFFORT."—ED.

WORLD MINING Will Be Of Great Help

Dear Sir:

I came across a few copies of WORLD MINING the other day and I was extremely interested in the contents.

I am interested in a gold mine in the Northern Transvaal and have recently formed a company called the Race & Base Metal Development Company and we hope to start prospecting shortly.

I feel that your magazine will be of great help to us and wonder if you would please put me on your circulation list.

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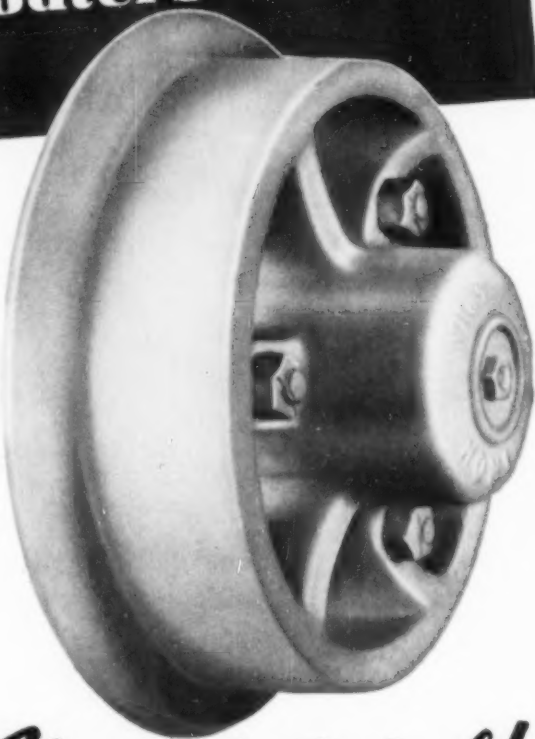


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A Miller Freeman Publication

Published monthly except in April when publication is semi-monthly

SEPTEMBER, 1950

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DRIFTS AND CROSSCUTS

There Is No Quick Method, Mr. President

The following is reprinted from an editorial appearing in the September, 1947, MINING WORLD—just three years ago. "Let us pray that there will never be an American mother who will have occasion to look back to August 8, 1947, as the day when a President of the United States deliberately and with full understanding of the situation, dried up a substantial part of the domestic supply of metals essential to national defense. . . ."

Reference is, of course, made to the President's veto of the Allen Bill.

Since that veto many American mining men have continually and unsuccessfully warned, advised, requested, and demanded that Congress pass legislation which would aid in maintaining a healthy, active, growing domestic mining industry as a basic part of National preparedness.

The production figures given below show the decline in domestic production of copper, lead, and zinc since 1947. The decline is much more serious when contrasted with the peak World War II production in 1942.

Year	DOMESTIC MINE PRODUCTION OF COPPER, LEAD, AND ZINC IN SHORT TONS		
	Copper	Lead	Zinc
1947	847,563	384,221	637,608
1948	834,813	390,476	629,977
1949	752,750	404,032*	583,882*
1950*	878,000	440,000	590,000
1942	1,080,061	496,239	768,025

* Preliminary.

* Based on monthly average production from January through May and projected for the entire year.

During testimony before the House Banking and Currency Committee, W. Stuart Symington, chairman of the National Security Resources Board, said that "zinc and copper are in short supply and in the event of an all-out war there was little stockpiled for the war effort."

In a recent report to Congress the President reported, "Copper has been in such short supply that demand has exceeded output and domestic stocks have been dwindling." At the same time a report on "The Economic Situation at Mid-Year 1950" prepared by the President's Council of Economic Advisors, contained the following, "Non-ferrous metals are situations where capacity has lagged behind the requirements of an expanding economy."

One of the commodities singled out by the President which needed quick attention was copper.

Three years have been lost. There is no quick method to discover, develop, and bring into production a copper mine with the necessary mill and other facilities, Mr. President.

Last Minute Reports

To give MINING WORLD readers the latest news about mining developments throughout the world immediately following the start of the Korean War all foreign correspondents were requested to forward complete reports for the September issue.

The speed of modern transportation enables you to read news contained in these reports written on the following dates: England, July 26th; Australia, July 27th; Holland, July 26th; Sao Paulo, July 27th; Vancouver, July 28th; Mexico City, July 31st; Buenos Aires, July 28th; Calcutta, July 25th; Frankfurt, August 3rd; Redruth, August 1st; Johannesburg, July 30th; Tokyo, August 3rd; and Lima, July 31st.

G. O. A., Jr.



CAPITOL CONCENTRATES

SENATORS O'MAHONEY AND MCCARRAN CALL FOR ACTION TO INCREASE MINERAL OUTPUT

The National Minerals Advisory Council, at its meeting in Washington on August 3rd, recommended immediate enactment by Congress of premium price legislation and a mine loan exploration program to stimulate production of strategic metals and minerals needed in the defense effort.

The meeting was an emergency session called by Oscar L. Chapman, secretary of the Department of Interior. Thirty-nine of the council's 46 members attended, and Horace M. Albright, chairman, presided.

Special committees were appointed to work out details of the mining industry's role in the present emergency, with emphasis on allocations, priorities, and co-ordination of mine dealings with various government departments. Commodity committees were reactivated and instructed to meet separately at the earliest possible date to determine present condition in their respective segments of the industry. They were asked to explore various angles, including labor, machinery, transportation, automotive and stationary equipment, power, fuel, water supply, etc., with special attention to steel requirements, both present and future.

Reports of all committees will be considered by the council as a whole at a meeting scheduled for September 1st in Salt Lake City, Utah.

Following an opening statement by Secretary Chapman, the meeting was addressed by Senator Joseph C. O'Mahoney of Wyoming and Senator Pat McCarran of Nevada.

Senator McCarran urged the mining industry to give serious attention to plans for unwatering and re-timbering closed mines which might again be made productive. He termed the early rehabilitation of closed mines an "absolute necessity" in view of national needs for minerals. Manpower, he said, is an especially great problem in expansion of the mining industry, and he asked the council to advise the government as to means to attract back to the industry skilled labor which has migrated to other fields.

Senator O'Mahoney stressed the increasing important position of minerals because of the threat of communism to world peace.

The council discussed manpower problems, financing, premiums and bonuses, priorities and allocations, and the establishment of an Office of

Federal Minerals Coordinator. Committees were set up to follow through with specific plans.

Charles F. Willis, secretary of the Arizona Small Mine Operators Association and member of the council, spoke in favor of a bonus or premium system, such as is contained in the Murray-Engle bill. This plan, he said, could be reduced to an administrative order and operated under the Defense Production Act now being studied by Congress. In its resolution, the council did not name any particular premium price bill, but did endorse the principle of such a payment system.

The Committee on Exploration and Development Incentives unanimously adopted a resolution which outlined a mine-loan program.

Reports of committees will be submitted at the September meeting, and the council's recommendations then transmitted to the Secretary of the Interior for use by the Government in co-ordinating the various activities involved in mobilization planning.

● Mine Loans Will Be Asked

An attempt will be made on the House and Senate floors, according to reliable information, to amend the Defense Production Act of 1950, the President's new war powers act, to specifically provide for mining loans. The newly appointed RFC directors, Rowe of Massachusetts, Cosgriff of Utah, and Harber of Oklahoma should urge enactment of S. 497, to amend the RFC act to permit mining loans.

● Sound Request Was Made

Representative Walter S. Baring of Nevada took the initiative in suggesting to Interior Secretary Oscar L. Chapman that the benefits of the advice of the National Minerals Advisory Council should not be kept for the exclusive use of the Secretary and the President. In a wire to Chapman, Baring said in part: "Would suggest at some point during the advisory committee meeting invitations be extended to myself and other key members from the western states to meet with your representatives and members of the National Minerals Advisory Council so that not only the Administration will benefit by the advice of these men, but the members of Congress as well. We are the ones who supply the administration with the necessary authority to carry out such plans as may be determined, and we should be fully informed."

Why not hear from the large seg-

ment of the domestic industry not represented at this council meeting?

● Chrome and Manganese

The cold war with Russia—and it seems to be getting a bit warmer all the time—continues to extend to manganese and chrome. Shipments have been on and off for a long time, but for a period of three or four months were shut off completely. In view of this, and the fact that our reserve situation is in bad shape, combined with the tremendous drive for steel production, one would think that the Government would take positive action to stimulate domestic production.

Instead, the Bureau of Mines talks vaguely about long-range experimental programs which might not bear fruit for years.

It is a curious thing that our smart planners, who know all the economics in the book, are unable to quite grasp the fact that price brings out production and that no one but the Government can afford to operate at a loss. It has been stated in several quarters that the National Security Resources Board, headed by Symington, has flatly refused to change the Government policy of no bonuses, premiums or over-the-market contracts for domestic production, in spite of the emergency. They are turning out to be a sorry lot of planners.

● Shortages and the Administration

For several years members of Congress, especially those from the western states, have been complaining bitterly at the Munitions Board's conduct of stockpile purchasing. Of course, the actual mechanics of buying are handled by the General Services Administration, but policy is dictated by the Munitions Board. While the gripes of the various committees which have looked into the program have been many, they have been directed chiefly at the lack of "buy-American" and the slowness of accumulation of actual physical stocks.

The expenditure of appropriations has been no real measure of stocks. It has been discovered, as much of the money has been earmarked on long-range contracts for future delivery. The House Public Lands Committee has urged an accelerated and greatly increased program a number of times. At hearings in May of 1948, the mining subcommittee of Public Lands made extensive recommendations, including doubling the objectives. This excellent and detailed

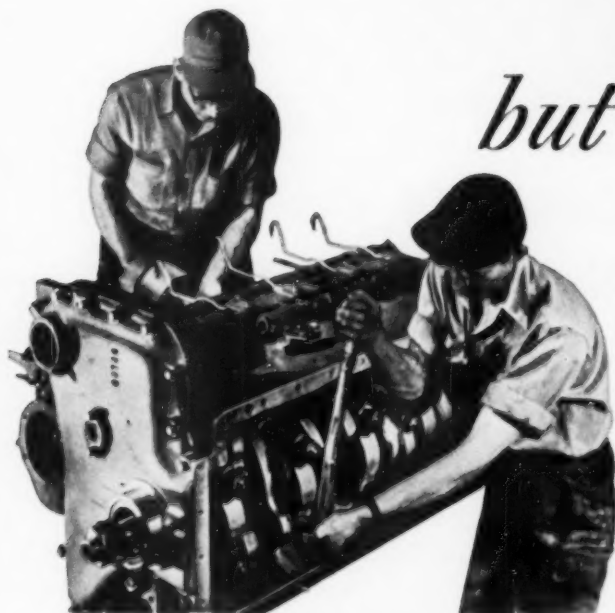
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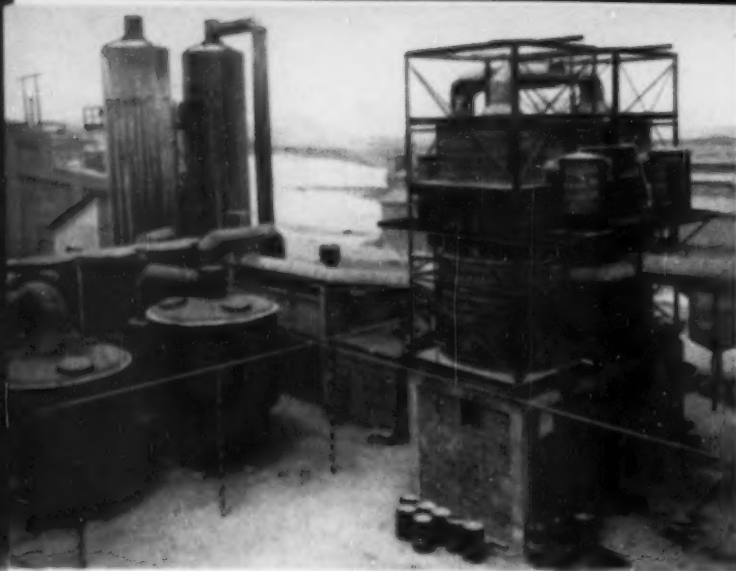


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A view of the Contact-type sulphuric acid plant. It has a capacity of 150 tons per day of 100 percent H_2SO_4 . The converters are in the left foreground, drying and absorbing towers in left background, and mist precipitator in right foreground.

ANACONDA INCREASES PHOSPHATE OUTPUT FOR GROWING MARKETS

One of the many metallurgical operations of the Anaconda Copper Mining Company at its Anaconda Reduction Works is the manufacture of treble superphosphate and phosphoric acid fertilizers.

Plant facilities have been expanded to meet steadily increasing demands. This expanded capacity now results in production of 260 tons per 24 hours of 42 percent available P_2O_5 , treble superphosphate and 55 tons per 24 hours of 52 percent P_2O_5 , phosphoric acid.

Long in the Field

Anaconda began experimenting with producing fertilizer from phosphate rock before 1920. The underground mines at Conda, Idaho, were developed later. Today, over 30 years after this pioneering work, the phosphate plant is an integrated enterprise turning raw materials into finished products in the same plant.

Compared with other types of phosphate rock, that mined at Conda is low grade, averaging about 30 percent P_2O_5 . In addition to the phosphate content, the rock contains an average of 0.29 percent V_2O_5 . Rock from the mine is sized to minus- $\frac{3}{8}$ inch before being loaded into railroad cars for shipment to the Anaconda Reduction Works where it is discharged into a 430-ton bin at the phosphate plant.

Scouring Mill

Two beds of phosphate rock are mined at Conda. Production from the one known as the footwall or high vanadium bed, is shipped directly to the phosphate plant at Anaconda and is put through one circuit in the phos-

phate plant for vanadium recovery before being turned into treble superphosphate. The other bed, known as the hangingwall bed, contains considerable clay. This clay is removed from the rock in a scouring mill located at Conda before the washed rock is shipped to Anaconda.

Left: Clarence Taw, general foreman, Martin C. Messner, superintendent and Kurt F. Ruckwardt, assistant superintendent, of Anaconda's phosphate plant. Top: Emmett P. Minahan, operator, and Calvin Stevenson, general foreman, in the bagging room. Bottom: E. Mill, filter operator, and James A. West, foreman, stand beside one of the five square meter band filters.



The scouring mill beneficiates this hangingwall rock by reducing the clay to slime, thereby permitting this unwanted material to flow over the tail race to waste. The mill turns at 15 rpm. and discharges a product that varies between 65 and 80 percent solids with control based on a pulp density of 1.04 to 1.06.

The reduction in volume by scouring is considerable as one ton of raw material results in about 1,700 pounds of scoured product. Assays, on the other hand, show a marked phosphate increase, the figures being 30.9 percent P_2O_5 for the mine rock and about 33.8 percent P_2O_5 for the scoured product. Recovery on this basis, is approximately 93 percent of the P_2O_5 .

At Anaconda the product received from Conda is calcined at 1,650° F. in six 20 feet outside diameter MacDougall type gas-fired roaster furnaces to reduce contained organic material which averages about 8.5 to 9.5 percent of the rock.

Acidulation, Filtration and Evaporation

Essential equipment in the plant consists of five Pachuca-type agitators, five 5-square-meter Band filters, 11 Swenson Evaporators, two 2-ton Pratt Mixers, two 48-inch setting belts each 530 feet long together with acid storage and clarification tanks. Freshly made treble superphosphate is aged in a 7,000-ton ageing bin, then dried in six MacDougall-type roasters, ground in three Sturtevant ring roll grinders followed by two dedusters, one Sly dust catching apparatus and a pelletizing plant for pelletizing the fume dust that is caught.

Sulphuric Acid Production

The supply of sulphuric acid required for the phosphate plant is manufactured in a 240-ton (60° Baume) per 24 hours Chamber Plant and a 290-ton (60° Baume) per 24 hours Contact plant. Sulphur for these acid plants is obtained from the flotation concentrating plant which uses as its feed the tailings discarded from the copper ore concentrator. About 350 tons per day of 44 percent sulphur bearing concentrates are required to operate both acid plants.

Rock Pulverizing Plant

The calcined rock passes from the roasting furnaces to coolers 30 inches in outside diameter by 19 feet, 6 inches long, thence by screw conveyors and elevators to 70-ton feed bins. From the bins the calcine is fed to a battery of three No. 6669 low side Raymond roller mills or pulverizers. These mills, each having a capacity of approximately 12 tons of rock per hour, reduce the material to a size that permits about 95 percent to pass through 100 mesh.

From the Raymond pulverizers, the vanadium bearing powdered rock is charged to two 16 feet diameter by

30 feet deep Pachuca-type agitators that operate in series. In these agitator tanks the rock is acidulated with 60° Baume Sulphuric acid. The direct product of this chemical reaction is the formation of gypsum and phosphoric acid, the acid carrying vanadium compounds in solution. This vanadium bearing acid after filtration and evaporation passes to the vanadium plant for removal of vanadium and is then returned to the phosphate plant. The non-vanadium bearing rock likewise passes from pulverizers to two other agitators and receives similar acidulation. This acid after filtration and evaporation is either used in the manufacture of treble superphosphate or 60° Baume Phosphoric acid. The combination of both agitator units treat approximately 410 tons of pulverized rock and use approximately 425 tons of sulphuric acid per 24 hours.

Phosphoric Acid Circuits

From the evaporators two acid products are obtained. One of these is acid containing about 46 percent P_2O_5 and the other 52 percent P_2O_5 , raised from a mother liquor averaging 27° Baume P_2O_5 .

The 46 percent P_2O_5 acid is pumped to a battery of six 250-ton tanks for clarification and to remove silicate salts. Clarified acid is delivered to the vanadium recovery plant for re-

moval as vanadium pentoxide. (Mining World, Anaconda Produces V for Victory, November, 1942.)

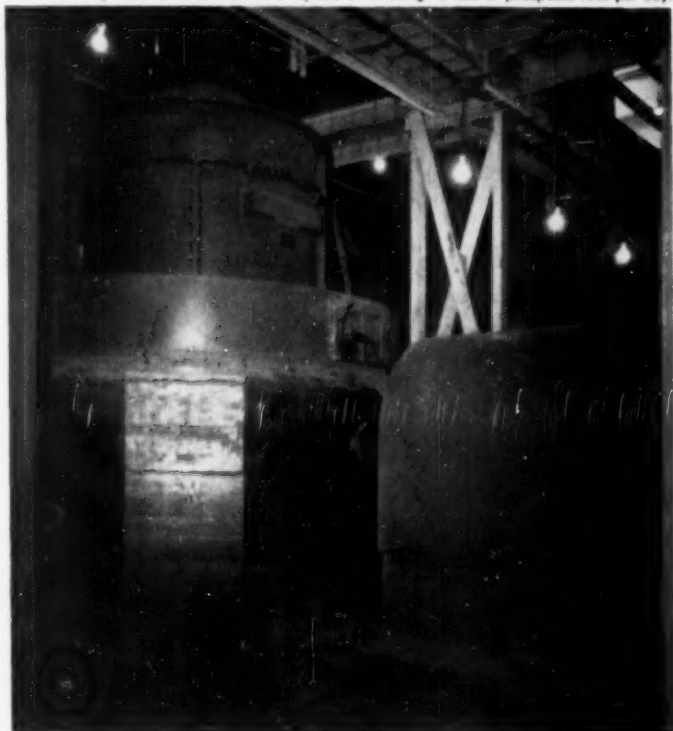
The low gravity 46 percent P_2O_5 acid freed of vanadium, is mixed with the fine rock product from the Raymond pulverizers in two model 104, 2-ton Pratt mixers. The blended plastic-like mix discharges from these machines onto 48-inch rubber setting belts. These belts, 530 feet long, travel slowly, the rate being only eight feet per minute.

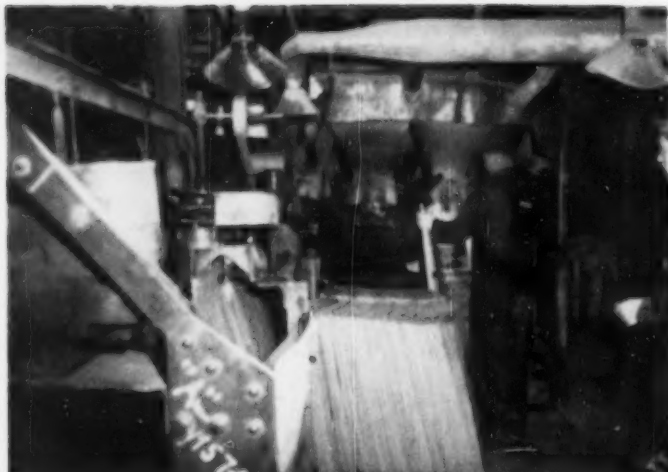
Phosphate Ageing

The set mix drops off the end of the belts into two 55 by 165-foot curing sheds where the treble superphosphate is allowed to cure and age. Ageing material is advanced to the end of the shed, removed from the belt discharge in progressive steps by traveling cranes with 2-yard buckets. At the end of 20 days, during which chemical reaction steps up the percentage of P_2O_5 available, the cured treble superphosphate is dried in six 20 feet outside diameter MacDougall-type gas-fired six-hearth furnaces at 450° F. From these furnaces the dried treble superphosphate passes to three Sturtevant ring-roll crushers operating in closed circuit with vibrating screens.

Undersize passes to a 6 by 10-foot rotating drum equipped with lifts to permit dedusting. Air is drawn

One of the Raymond Pulverizers which is capable of reducing 12 tons of phosphate rock per day.





Top: Model "A" Bagpack machines in action with a supply of empties close at hand, ready to keep the finished product moving out at the rate of 15 bags per minute. Center: The bags are sewed shut by this machine and sent by the inclined conveyor to railroad box cars for shipment to all parts of the western states. Bottom: Charles Hoffman, Swanson Evaporator operator, takes a minute to stand beside one of the battery of 11 evaporators that raises the phosphoric acid from 26 to 60 degrees Baume.



through the falling material at high velocity to remove most of the minus-100-mesh product which is caught in a Sly filter. The efficiency of this unit leaves little to be desired and the captured fines are mixed with water in a 6 by 28-foot revolving drum to produce pellets that are later dried in a 6 by 40-foot brick-lined gas-fired kiln. From this furnace the product passes through a 3½ by 15-foot cooler and to the grinding circuit.

Material is withdrawn from the finished product bin and shipped either in bulk or in 80-pound four-ply paper bags. A model "A" Bagpacker handles 15 bags a minute, filling, sewing, sealing, and conveying them to box cars for shipment. Bulk shipments are loaded into box cars by use of a screw feed device engineered at Anaconda for rapid loading.

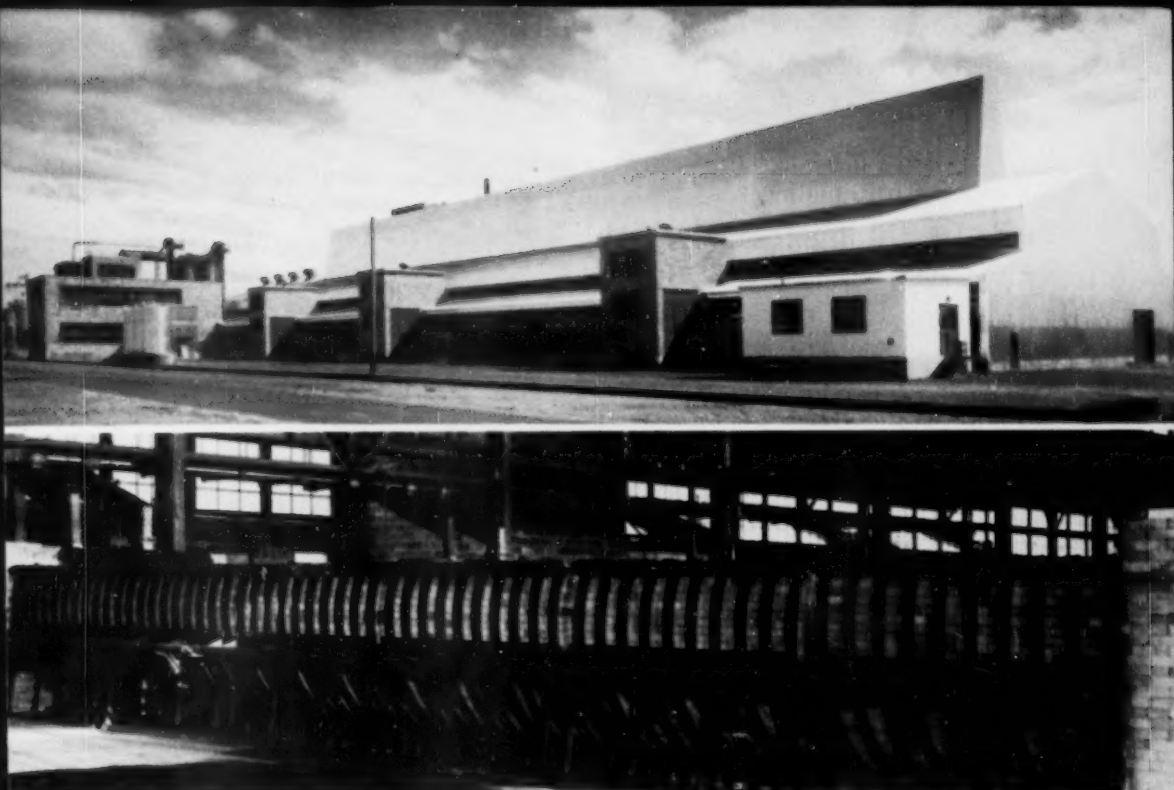
The high gravity 60° Baume Phosphoric acid is shipped to distribution points in rubber-lined steel tank cars. The principal use of this type of acid is as an agricultural fertilizer. It is applied to farm land by titrating into irrigation water.

Utah Firm Opens Placer Mine in House Range

The newly incorporated Queen of Hills Mining Company has begun placering at one of the few gold placer properties in Utah, in the House mountain range, 45 miles southwest of Delta. The company's claims cover about 400 acres in a gulch where gold, tungsten, titanium, tellurium, thallium, and thorium are found.

The property is equipped with gas-powered machinery at present, as no electricity is available. Eventually a diesel-electric plant probably will be installed. An interesting piece of equipment being used is a Stephan concentrator, invented by James Stephan of Sacramento, California, and said to be able to recover 99 percent of the gold run through it. Its capacity is 100 yards of gravel per day, and the operators are hoping to double output later by installing a larger machine. They say that should they run out of gold-bearing gravel, there is enough tungsten in this region to warrant a good-sized operation.

James E. Ellison of Layton is president of the company.



Top: The new silicon carbide plant of the Carborundum Company is built on a 99-acre site adjacent to the Port of Vancouver, Washington, Terminal No. 2. This picture shows the 560-foot long furnace building. Bottom: One of the electric furnaces which makes silicon carbide from silica and carbon is shown above.

NEW SILICON CARBIDE PLANT

The Carborundum Company's Vancouver, Washington, plant brings a new industry to the Northwest to use mineral raw materials and cheap power

The Carborundum Company recently started production of Carborundum silicon carbide in its new plant at Vancouver, Washington. John L. Bergman is plant superintendent; A. C. Knapp, plant engineer and E. E. Einhorn, office manager. Costing over \$2,000,000, the new plant is located on a 99-acre site adjacent to the Port of Vancouver Terminal No. 2 and is considered one of the most modern plants of its kind. Already the world's largest producer of silicon carbide with similar plants in Niagara Falls, Quebec, Ontario and Norway, the new plant in Vancouver will augment the company's supply of silicon carbide which is one of the principal abrasives used in the manufacture of grinding wheels, sharpening stones, coated abrasives, other

abrasive products and refractories.

The plant site was purchased in 1947 and construction started in the spring of 1948. The Nicholson Company, Inc., and the Chemical Plants Division of the Blaw-Knox Construction Company did the engineering and construction job under the direction of Leroy J. Call, director of engineering, special projects, of The Carborundum Company.

Western Raw Materials

The availability of electric power, the proximity of raw materials and the desirability of having facilities conveniently located to serve the abrasive and refractory needs of growing industries in the west, influenced the company to locate its new plant in Vancouver.

Designed to permit continuous flow of materials through it, the mix building is built of reinforced concrete. In its layout and design are incorporated 58 years' experience in the manufacture of silicon carbide, which was invented by the founder of the Company, Dr. Acheson, in 1891.

The raw materials, silica and carbon in various forms, sawdust and salt are stored as received, to be readily available and then processed in facilities adjacent to the mix building. After processing and preparation for use, the materials are stored in final form in the high bins at the top of the mix building. These materials flow by gravity through the various stages of weighing and mixing on the second floor and down to the mixer on the ground floor. All equipment is



Left: The coke and carbon building are shown in the left foreground, the quartz crushing building in the right foreground and the mix building in the background. Right: The sawdust building is in the foreground with the mix building on the left.

fully automatic, electrically operated and push-button controlled, designed to permit maximum efficiency and freedom from dust in operation.

Electric Furnaces

Like the mix building, the furnace plant incorporates many new features. Spacious and well ventilated, it is designed to provide the best possible working conditions. It is built with welded steel construction, and is 100 feet wide and 560 feet long. It houses batteries of large silicon carbide furnaces. These furnaces are of the resistor type, carrying the electric current through a furnace core connected to electrodes in the heads of the furnace.

Furnaces are loaded in sequence as required with mix brought in by overhead cranes. The passing of electric energy through the furnace results in the combination of the silica with carbon at a temperature of approximately 4,000° F. to make silicon carbide which forms in a glistening ring of dense and colorful crystals around and throughout the length of the furnace core. The power is then shut off and the mass allowed to cool.

Before it is entirely cooled, the upper sections of the sides of the furnace are removed and the top crust and loose materials on the sides are removed exposing the core of silicon carbide. The glistening mass of silicon carbide is then broken up, loaded into large tilting buckets and taken by overhead electric crane to a chute through which the silicon carbide chunks pass through a giant jaw crusher on their way to be processed by further crushing and grading for shipment.

Electric power is obtained from the Bonneville Power Administration over high tension transmission lines to the plant site and is supplied through step-down transformers fully equipped with voltage control devices for proper furnace operation.

Provisions have been made in the maintenance and general utility building for a laboratory for the control of the raw materials and the finished products, a machine shop, electrical welding and blacksmith shop, storeroom, boiler and pump room, and garage.

Fuel oil is stored in three large tanks. Water for plant use is obtained

from two wells equipped with deep well pumps and stored in a huge supply tank. Connection is also made to the City of Vancouver water system for emergency and sanitary use. Administration and office functions are located in a separate Office Building.

Throughout the plant great care has been taken to provide good working conditions for the employees. Very complete dust removal systems have been installed. Locker, washrooms, and other facilities for the employees are located in the maintenance and general utility building.

Many Abrasive Uses

The silicon carbide produced in the plant, as well as that produced in other crude silicon carbide plants of the company, is shipped to abrasive and refractory plants throughout the world where it is fabricated into thousands of abrasive products, refractories, and other products required by modern industry. It is sold in the grain form for such operations as polishing metal, stone, or glass surfaces, or it may be bonded with clays, synthetic resin, shellac, rubber, or sodium silicate for use in all types of grinding or polishing operations from rough grinding on castings down to putting the keen edge on a razor blade. It may also be coated on paper, cloth or fibre with glue, synthetic resin or varnish to produce what is commonly called sand paper, used in the automobile, metalwork, furniture, shoe, glass and other industries, to obtain the finish required by modern precision industry. There are very few manufacturing processes where this abrasive material is not, or could not, be used.

The buildings and facilities were built and designed with a view to possible expansion in the future. This is but the first of the plants which The Carborundum Company hopes to build in Vancouver to meet the abrasive and refractory demands of growing industrial plants in the west.

Left: John L. Bergman is superintendent of the new Carborundum plant. Center: L. J. Call supervised the design and construction of the plant. He is director of engineering, special projects, of the Carborundum Company and maintains headquarters at Niagara Falls, New York. Right: A. C. Knapp is plant engineer.



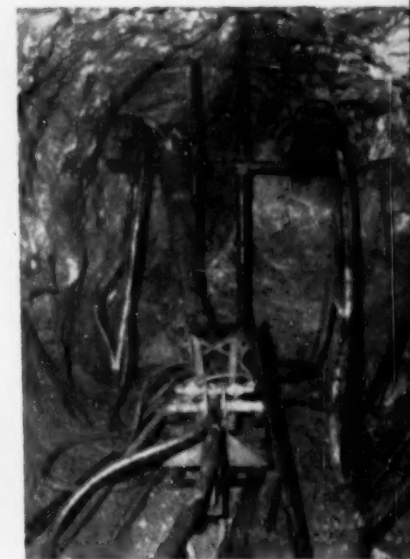
INCREASED METAL OUTPUT NEEDED

Tense international situation means that American mineral producers are again stepping up their output as far as possible for victory



COLORADO—The Rico Argentine Mining Company at Rico, Dolores County, has resumed limited production of zinc-lead-silver ore at its Rico mines. The company's differential flotation mill, pictured at top above, was remodeled during the shutdown period which began in May, 1949. One-shift-a-day production centers at the company's Mountain Springs and Swan mines, with development continuing at several other mines in the district.

ARIZONA—(bottom) The Coronado Copper and Zinc Company is proceeding with necessary rehabilitation work in order to resume mining operations at its Johnson Camp properties, near Dragoon. Fred E. Gray, manager, is directing the work, assisted by M. G. Grant, one of the company's engineers. Sinking of the three-compartment Moore shaft was started in mid-June. C. S. Elayer of Silver City, New Mexico, has the sinking contract.



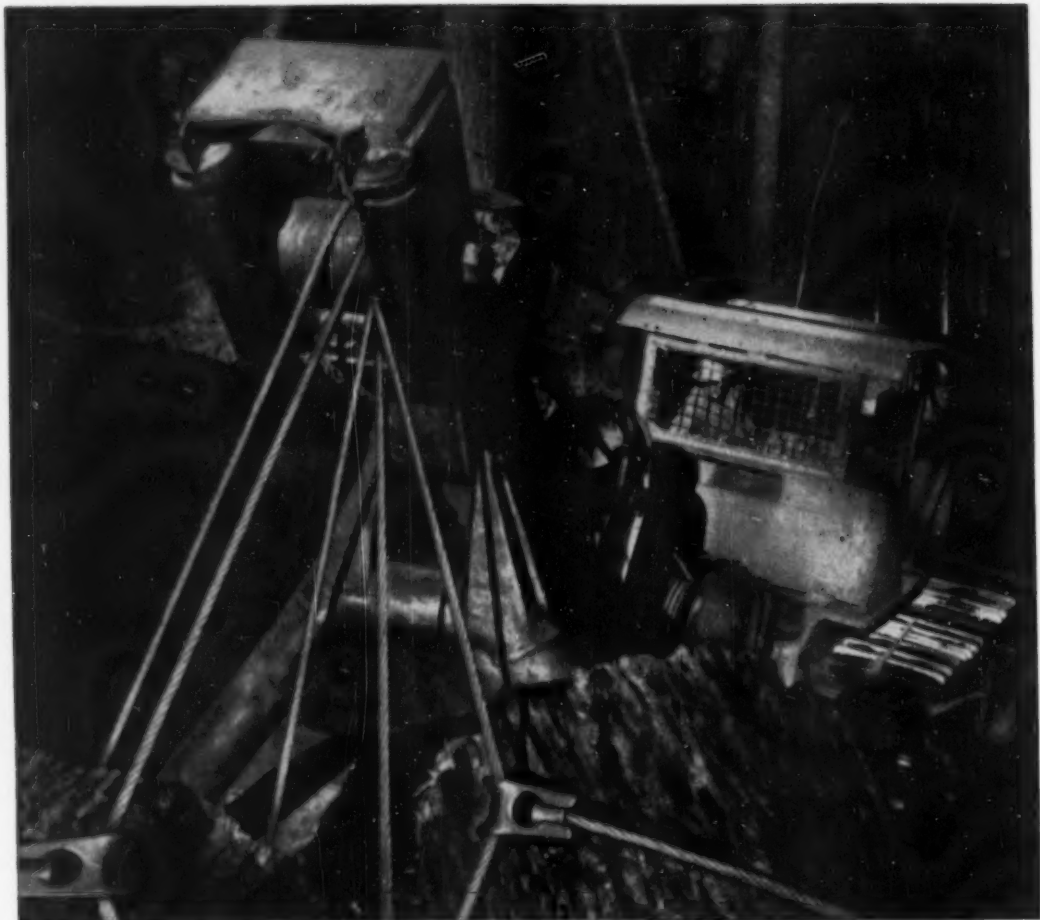
IDAHO—The Bunker Hill and Sullivan Mining and Concentrating Company has resumed limited operation of its block-caving project. Suspension of operations in the upper part of the mine was made last spring after the price for lead had declined to 10½ cents. Pictured above is a typical portable jumbo at the face of a development heading being driven as an early phase of the 5,000,000-ton low-grade ore caving project.



UTAH—American Smelting & Refining Company has started anode production at its Garfield, Utah, copper smelter. The plant's new anode casting department was built at a cost of \$1,500,000. The anodes will be shipped to Kennecott Copper Corporation's new electrolytic refinery.



NEW MEXICO — The United States Smelting, Refining & Mining Company has reopened its Bullfrog zinc-lead mine at Baysard. The mine had been closed for about a year. The picture on the left shows the head-frame of the No. 2 shaft, office, crusher, and mill buildings.



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Muriel Sibell Wolle Describes

FAMOUS TELLURIDE MINES

The Uncompahgre mountains in western Colorado form a saw-toothed barrier around which and over which men have struggled in their search for precious metals. As early as 1870, Darling, who was making a government survey in the area, saw enough indications of probable ore deposits to make him return to the region in 1872 and begin prospecting where the town of Rico now stands. A group of prospectors, led by Col. S. H. Baker, left Del Norte in 1876 and worked up the San Miguel river until they uncovered gold bearing sands in the stream bed. While they dug and panned the gravel they talked of a town—San Miguel City—which they would build along the banks of the stream. The same year, Messrs. Lowthian, Mitchell and Brown laid out the townsite in the midst of heavy timber. "Care was taken not to destroy the natural forest on the ground . . . thus the townsite is already provided with shade trees," boasted the founders, as they cut logs and built sturdy cabins along the muddy streets.

Almost immediately San Miguel City had a rival—a camp called Columbia, which was "full of high-grade activity and enterprise." This camp, which was at the upper end of the valley, close to the mines, had broader streets. From it ore was packed by burro trains every day over the range by way of Mt. Sneffels to Ouray. Another small camp known as Newport, but usually called Pandora, sprouted at the foot of Ingram Mt., three miles above Columbia.

In August, 1875, John Fallon discovered the Sheridan vein which proved to be the most important in San Miguel county, for it contained tremendous bodies of rich ores and has continued to yield "satisfactory dividends" over a long period of years. On this vein were later located the Mendota, Smuggler, Union and other claims.

The following July, J. B. Ingram "happened to be in the Marshall Basin on a prospecting expedition and while thus engaged, measured the length of the Sheridan and Union claims, as they seemed in excess of the legal allowances of lineal feet." He found that each covered 500 feet more than was allowed and "set his own stakes on the intervening ground." He called his claim the Smuggler, and upon working it discovered that he had uncovered a bonanza.

The Sheridan, Smuggler and Mendota mines were known as the

"Sheridan Group." The vein on which they lay was a "true fissure six feet wide, made up of ores which were chiefly sulphide in character with lead, zinc, iron, and copper yielding gold and silver," with gold values predominating. Until an aerial tram was built from the mines to the mill 6,700 feet away and 2,300 feet below, everything had to be transported over a mountain trail carved along the side of a rugged precipice.

The camp of Columbia, whose name was changed in 1881 to Telluride, grew slowly all through the eighties, its isolation from a railroad greatly retarding the development of nearby mining properties. Finally, in 1890, the Denver and Rio Grande Southern railroad reached the city and from then on its growth was more rapid and mineral output increased until 1893. The silver ban temporarily paralyzed the camp until the late nineties, when paying gold values were found in certain of the biggest mines and the camp boomed again. The population rose to 3,500, with 1,500 more men living at the mines. At its peak Telluride was a big place with a brick courthouse, a bank, large school buildings, several churches and an Opera House, all occupying sites in the heart of the business district. The Sheridan Hotel adjoined the Opera House and a door from its stage opened into the hotel's corridor. Of the 21 saloons and gambling houses and eight brothels that once served the city little remains. Fire destroyed the "sporting section" years ago and it was never rebuilt. Today, although some blocks have rows of

empty buildings, the heart of town is full of stores and the streets back from the main thoroughfare are lined by homes with gardens gay with flowers and shaded by trees. The first electric power plant in the region was erected in 1893 by L. L. Nunn to supply power for the mines and mills and to light the city, and so efficient was it that it was announced that the plant could supply power for the whole county!

Telluride is surrounded with basins where veins crop out. At the head of Bridal Veil Basin are fissure veins containing gold, silver, copper and lead. In Ingram Basin, above Ingram falls, is the Black Bear mine, elevation 12,400 feet, reached by a switch-back trail. The trail climbs 2,000 feet in a little over a mile from the valley floor, starting beyond the Smuggler-Union Mill. High above the town are Marshall and Savage Basins in which the Sheridan, Columbia, Mendota, Cleveland, Bullion, Hidden Treasure, Japan, Flora, Smuggler, Union and Tom Boy mines are located.

The Smuggler and the Union were discovered in 1876 and both proved rich from the grass roots. Ore from the Smuggler was first packed by burro train to Ouray and then sent by wagon 260 miles to the railroad. Smelter charges were \$32 a ton and miner's wages \$4.00 a day, yet the ore was milled at a profit.

The Union was on the same vein as the Smuggler but below it, and the Pandora was below the Union. The Smuggler vein has been worked for over a mile in length and for a vertical depth exceeding 1,000 feet. The

Telluride is still a mining town but not all of its mines and mills are working. At night one misses the twinkle of lights high up the mountain sides at the Tombay, the Blackbear or the Liberty Bell mines.



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Pandora mill, on the valley floor far below the mines, was erected in 1877 and has been remodeled and enlarged several times since then. In 1888 it was equipped to handle "second grade ore" and its capacity increased to 80 tons a day. By 1898 it treated 200 tons a day. In 1947 a mill-level transportation and drainage tunnel was begun by the Telluride Mines, Inc., for the purpose of exploration 1,000 feet below the existing workings.

A county road zigzags up the face of the mountain to Savage Basin, past the Smuggler to the Tom Boy mine, elevation 11,325 feet. Located in 1880, one mile above the Smuggler-Union, it paid from the surface. It has been called the "greatest free-milling gold mine in Colorado" and "one of the most profitable properties in the world." At one point in its development "its ore resources in sight will not fall short of \$15,000,000." Around the mine a small camp sprang up with stores, livery stables, a school and cabins, all within a few yards of the big mill. A daily stage carried passengers and mail up the narrow ledge to the isolated property. At its zenith, its workings were developed $4\frac{1}{2}$ miles within the mountain. In 1894, the property brought \$1,000,000. Three years later it was sold for \$2,000,000 in cash. In 1898 "from 3 to 6 balls of amalgam, worth from \$900 to \$1,200 each are cleaned from the plates every 24 hours."

Another big mine in the area was the Liberty Bell. It was discovered in 1876 by Cornett but the property lay idle until 1897 when it was acquired by the U. S. British Columbia Mining Co. The following year operations began, continuing successfully until 1920 with but two interruptions—one because of a snowslide and the other because of labor troubles.

Every spring the snowslides ran, thundering down the steep slopes of the high mountains which tower above the town. Every miner who ventured up and down the snow-packed trail from bunkhouses to tunnel entrances, or snowshoed to town, tested each step before risking his weight on the sparkling white surface. Some slides merely roared to the valley below but others swept away tramways, cabins and any hapless miner or burro who happened to be in their path.

The worst year for slides was 1902 when they began to run earlier than usual, carried away the tramway at the Liberty Bell and caught some of the men at the mine. A second slide trapped the rescue party and buried more men under the tons of snow. "As soon as it was light, a search party went back to the drift . . . in spite of danger every step of the way up the steep trail.

The townspeople were on the verge of panic. "Death and destruction lurked in every mountainside."

News of slides was an almost hourly occurrence." On the day of the mass funeral all Telluride "was in sombre gloom" and all business was suspended. The dead men were followed "by the largest funeral cortege ever known in the San Juan."

In October, 1903, miners at the Tom Boy struck because the manager had started its mill with non-union labor. The mine lay idle until November, when the Mine Owners' Association requested the Governor to send state troops to guard the non-union men with whom the management proposed to reopen the mine and mill. No troops were sent until sometime later but upon their arrival twenty-two men were arrested and deported to Ridgeway where they were un-

loaded from the train which had taken them there and were warned never to return to their homes. In March an even larger number of union men and sympathizers were rounded up and sent to Ridgeway with the same warning. The Telluride Mine Owners' Association then issued the statement: "We do not propose to enter into negotiations of any nature with the Western Federation of Miners. We do not recognize a union in Telluride. There is no strike in Telluride. There is nothing to settle."

Telluride is still a mining town but not all of its mines and mills are working, and at night one misses the twinkle of lights high up the mountainside at the Tomboy or the Black Bear or the Liberty Bell mines.

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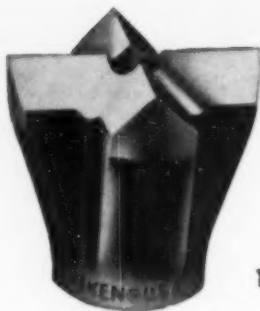
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MINING WORLD

ACTIVITIES OF U. S. MINING MEN



C. R. RANNEY, mining engineer and geologist, has been made operating engineer and assistant to Frank Eichelberger, general manager, for Nancy Lee Mines, Inc., Kellogg, Idaho. His past experience includes engineering work for the International Nickel Company in Canada, for two Philippine gold mines, and for Phelps-Dodge Corporation, Arizona; and consulting engineering for a private prospecting organization in Mexico.

J. P. Schemmel has been named superintendent of the Crosby, Minnesota, mines of Pickands Mather and Company. He had been superintendent of the Albany mine and before that the Mahanomen mine. Schemmel takes the place of the late **P. S. Gray**. Pickands Mather also has announced the transfer of **Everett L. Joppa** from general superintendent of mines at Hibbing to the Duluth general mining offices of the company as an operating assistant. **E. J. Fearing** succeeds Joppa. He had been general superintendent of mines on the eastern Mesabi range. **Maurice L. Bradt** has become assistant general superintendent for the Hibbing district mines, and **Thomas C. Thielman** has taken Fearing's place. **Russell Kohn** has been made superintendent of the Embarrass iron mine. **Robert T. Bell** has been appointed assistant superintendent, Bennett mine, Keewatin. **Robert W. Bell** has been appointed assistant superintendent, Erie mine, Aurora. **T. R. Tregembo** has been appointed assistant superintendent of the Albany mine, Hibbing. **And LeRoy T. Lang** has been appointed assistant superintendent of the new Carmi-Carsen Lake mine, Hibbing.

George Roberts has bought the Lucky Boy mining claims, Dora Lake, Prince of Wales Island, Alaska. He will do exploratory work to determine what future operations for the old mine are best.

George W. Herbst has accepted a position as mining engineer for the M. A. Hanna Company, Hibbing, Minnesota. He recently graduated from the University of Minnesota, School of Mines.

Harold Pierce is back at Lost Chicken Creek, Alaska, for the mining season. He is in partnership with **James Lambert**.

A. Ben Shallit has returned to Fairbanks, Alaska, to prospect during the summer in the Nenana coal fields. He is former mining supervisor of the

RFC and consultant in Montana, Mexico and Washington.

R. C. Cole has been appointed assistant to the manager of the ore buying division of the American Smelting & Refining Company at New York, N. Y. He was assistant manager of the Utah Department at Garfield and is succeeded there by **C. R. Fish**.

John W. Harshbarger, assistant professor of geology at the University of Arizona, Tucson, has resigned to accept a field administrative position with the U. S. Geological Survey.

Edmund F. Martin, has been appointed general manager of Bethlehem Steel Company's Lackawanna plant, New York, succeeding **A. H. Shonkwiler**, resigned. Martin had been assistant manager for four years.

William McK. Green has been appointed ore sales manager of Cleveland Cliffs Iron Company, Ishpeming, Michigan, according to an announcement from **E. B. Greene**, chairman of the board. The former replaces **Henry A. Raymond** who retired but will be available as an ore sales consultant. **John S. Wilbur** has been made assistant manager of ore sales.



EUGENE P. REED, above left, has been appointed assistant to the general superintendent, Ore Mines and Quarries Division of the Tennessee Coal, Iron and Railroad Company, Birmingham, Alabama. He advances from the position of superintendent of the Muscoda Division. Before joining Tennessee Coal in 1948 he had been employed by the Wright-Hargreaves gold mine and the International Nickel Company, Canadian firms. He graduated from Ohio State University in 1928 as a mining engineer. The picture on the right is of **G. M. NEAL**, who succeeds Reed as superintendent at Muscoda. Neal has an engineering degree from the University of Alabama. He has been with Tennessee Coal since 1918 as stock boy, mine helper, student engineer and division operations engineer at the Wenonah Ore Mines, and assistant to the manager of industrial relations.

C. L. Holcomb has been appointed general plant foreman of the new washing plant being built by the Oliver Iron Mining Company at the

Gross-Marble mine, Michigan. He had been plant foreman at the Trout Lake plant at Coleraine. At the Trout Lake plant **Douglas O. Hanson** and **Fred G. Steffes** have been appointed foremen.

ARTHUR M. KENDALL, veteran mining superintendent, has been appointed general manager of the Central Eureka Mining Company's operations at Sutter Creek, California. Before joining Central Eureka, he had worked four years for Woodward Iron Company of Birmingham, Alabama, and for 17 years for several companies in which Newmont Mining Corporation has an interest, including the Resurrection Mining Company of Leadville, Colorado, and the Empire Star Mines Company, Ltd., Grass Valley, California.



W. L. Tomassoni has been made conveyor foreman at the Fayal mine, Oliver Iron Mining Company, Minnesota. **G. A. Kakela** is now pit foreman at the Mountain Iron mine and **G. J. Nemanich, Jr.**, lead foreman at the Soudan underground mine on the Vermilion range.

L. H. Duriez, former manager of the Bayard Department of the United States Smelting, Refining and Mining Company at Bayard, New Mexico, has been appointed consulting mining engineer. **J. T. Lewis, Jr.**, who was superintendent of the Ophir Unit of the company at Ophir, Utah, succeeds Duriez as manager at Bayard.

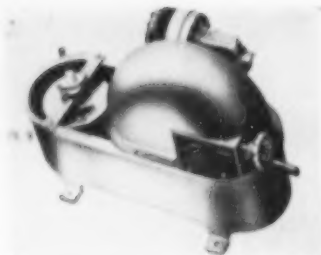
J. Bardswich is general superintendent for The Animas Minerals, Inc., Mancos, Colorado. The company is making regular shipments of ore from its Gold Dollar property in Montezuma County and resumed work at its Silverton, Colorado, holdings this summer, according to Bardswich.

G. A. Apell, United States Bureau of Mines, has been transferred from the Platteville, Wisconsin, office to Bluemont, Virginia.

Gilbert Hale has been made general plant foreman of the Douglas Reduction Works, Phelps Dodge Corporation, succeeding **F. W. Denny**, who was transferred to the company's Ajo Smelter, Arizona.

Francis A. Thomson, a graduate of the Colorado School of Mines and president of the Montana School of Mines, has been awarded the Distinguished Achievement Medal of the Colorado School. The medal was presented to him by **George A. Selke**,

(Continued on Page 66)



MODEL F
Teflon Plastic
MODEL E
Stainless Steel

THE CLARKSON REAGENT FEEDER

in
TEFLON PLASTIC
for extreme
corrosion resistance

Accurate measurement from
2 drops to 2 liters per minute

Write for Bulletin E. F.

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The Pursuit of Happiness

**"Count Your Many Blessings
Name Them One by One"**

In these dark days of wars and rumors of war, and the possibility of darker days ahead, it seems worthwhile to think of the things for which we fight. We are not alone in such a study, for the Honorable Mr. Menzies, newly chosen as Premier of Australia, lately came here to study these same things. He came because his country has so recently been delivered from the withering hand of State Socialism. He wished to renew his vision of what free enterprise can produce and has produced here.

Let us consider what he left at home and the industrial debris which he wished, for the moment, to forget. The final figures are too bewildering to use, so we write of things as they were in the mid-course of their dangerous experiments. Nonferrous metal mining did not come under government operation, so we write of coal. The operation of the Victoria mine, Wonthaggi, although its product went to government railroads, had accumulated a loss of \$3,232,500 in 11 years, and the deficit had mounted to \$7,554 weekly.

It has been a late Russian habit to claim credit for the initial discovery of most modern inventions. Perhaps, better than most Americans, Mr. Menzies knows that Russia was not the original inventor nor applicator of its own system of government. Marx, Engel, Lenin, and Stalin are mere imitators. Our first government in the New England colonies was a socialistic communism, and was a complete failure in its two years of operation. For this see Governor Bradford's book, which outlines the causes of the failure. In all history there has not been a single successful socialistic, communistic operation. There have been a few that were temporarily workable, but only where they were controlled by a strong-minded dictator, the truncheon of the police, or a background of the dismal barracks of the slave labor camp. In his book on Russia, Henry Wallace gave high praise to the accomplishments at a great industrial city there. Henry neglected to tell his readers that there was not a single free citizen in that city except the officials and the corrective police, and even that few are not truly free.

When we talk about American progress we often tell of it in terms of telephones, bathtubs, etc., but to workmen abroad the cornerstone of luxurious living is the personal ownership of an automobile. That would be like being on the road to Paradise. As Mr. Menzies visits U. S. factories, he will see row on row, acre on acre, completely covered by parked automobiles, belonging to the workmen. As he travels the roads of Pennsylvania or Ohio he will pass thrifty miners going home in their own automobiles, while in their pockets are monthly paychecks that are larger than the annual pay of miners in Spain or Italy.

A number of years ago the Army Quartermaster Corps built a fine warehouse of Oregon timber at Cavite, in the Philippine Islands. It stood for a few years. Then at the first blast of a typhoon the whole structure fell into ruins. *The termites had been boring within!*

Ideological termites also do "boring within." We all still remember the loud protest when a general revision of the mining laws was suggested, which would inaugurate a mining leasing system. We have felt the pressures by Forest Service, Grazing Service Bureau of Land Management, and leasing under the A.E.C. Patenting mining ground is now almost impossible. Now comes the joint prospecting and development program, with working leases a logical result.

Miners, beware the thin entering wedges of Statism and Nationalization!

The Wanderer
MINING WORLD

GARDNER-DENVER

TUNNEL CONSTRUCTION

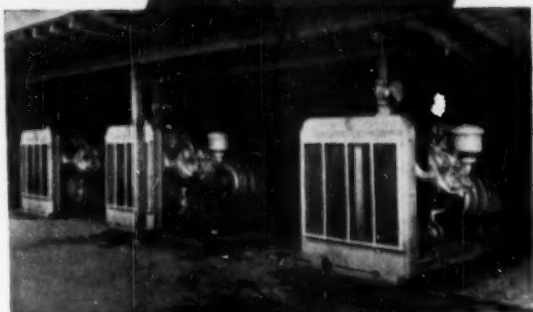
at the portal . . .

Ready to hook up and go — "packaged" WBJ Compressors require no special foundation — no water piping — no external cooling devices. That's why you get air power "on tap" days ahead of schedule — with a smaller investment in the compressor house. And remember, smooth-running WBJ Compressors — with balanced construction and self-contained cooling system — assure dependable, low-cost air to speed every foot of the bore.

at the face . . .

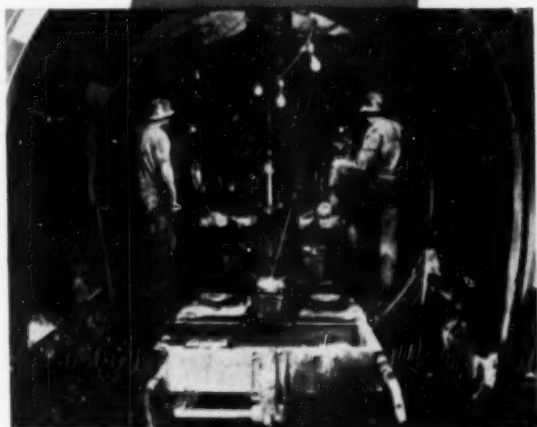
Save drilling time every round — choose versatile Gardner-Denver Hydraulic Drill Jumbos with "creep-free" booms. Faster on the setup — faster from hole to hole — faster tearing down. Handle up to 10-foot steel changes — give you low-cost drilling — faster, properly drilled rounds.

For complete information, write
Gardner-Denver Company.



750 cubic foot WBJ Two-Stage Compressors are available with gas, air, water, diesel or gasoline engine drive.

Complete truck-mounted jumbos are equipped with one, two or three drill booms and a reel jack unit. Standard hydraulic boom and reel jack units are available in various lengths for your custom-built jumbos.



GARDNER-DENVER

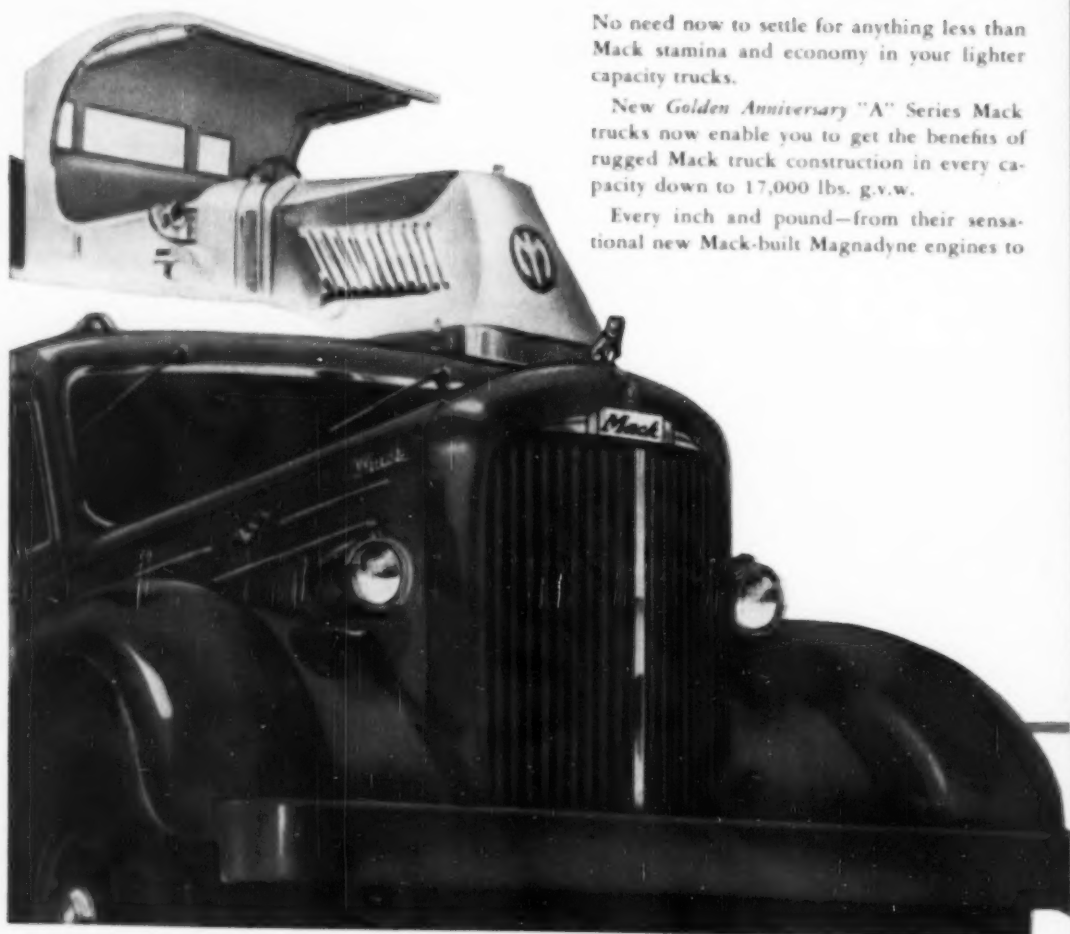
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NEW

Golden Anniversary

**Now! Money-Saving Mack
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No need now to settle for anything less than Mack stamina and economy in your lighter capacity trucks.

New Golden Anniversary "A" Series Mack trucks now enable you to get the benefits of rugged Mack truck construction in every capacity down to 17,000 lbs. g.v.w.

Every inch and pound—from their sensational new Mack-built Magnadyne engines to

MACK TRUCKS

advantages never -Size trucks

their exclusive rubber Shock Insulated spring suspension—these new Macks are engineered in the same high quality Mack tradition as their famous forebears . . . built to handle their hauling jobs with all the enduring reliability and longer life which has marked Mack performance for half a century.

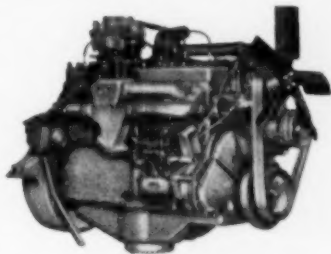
See these great new Macks at your nearest Mack branch or distributor. You'll find that for your lighter hauling jobs, they measure up in every respect to the standards you've grown to expect from dependable, long-wearing heavy-duty Macks.

BE PROFIT-WISE
modernize with

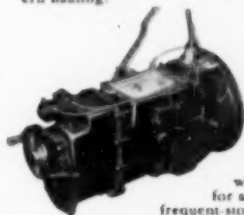


outlast them all

Mack Trucks, Inc., Empire State Bldg., New York 1, N.Y. Factories at Allentown, Pa.; Plainfield, N.J.; Long Island City, N.Y. Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.



Greater fuel economy . . . longer engine life . . . lower maintenance costs . . . sustained high performance. You get them all in the great new Magnadyne engine—a powerplant designed and built by Mack especially for modern hauling.



Prolonged Clutch Life with less need for adjustment in frequent-stop operations is assured by oversized clutches—one full size larger than customary on competitive makes of trucks.

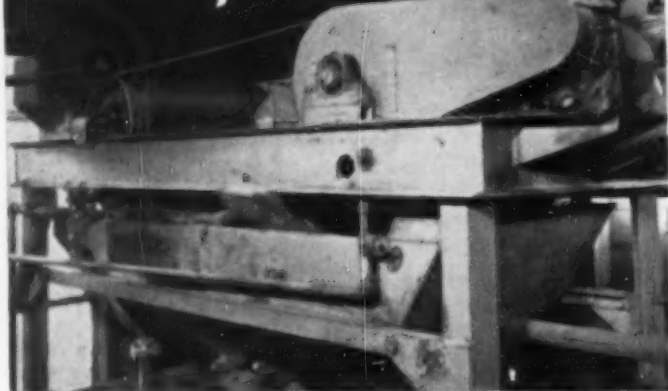


Broad adaptability to diversified operating conditions is made possible by models which offer a choice of over-geared or direct drive type transmission, as well as axle selection and a range of gear ratios.

Frame stiffness and strength are assured by full-depth side-members braced by cross-members of Mack's box-girder design. Mack rubber Shock Insulators at spring-ends eliminate twisting strain, absorb vibration, require no lubrication or adjustment, last indefinitely.



APPROVED SEPARATOR for MEDIA RECOVERY



AMERICAN CYANAMID APPROVES STEARNS MAGNETIC SEPARATOR



FEATURES

- Lowered treatment cost due to highly efficient recovery
- Continuous, automatic recovery during fluctuating feed conditions
- No possibility of short circuits as air cooled magnet is suspended completely above water bath
- Test results indicate improved overflow weir action results in less media loss in overflow discharge
- Action of separator is visible to operator at all times
- Simplified operation
- Shipped complete, ready to install. No additional feeders or extensive piping necessary

AFTER completely satisfactory performance at the American Zinc Company plant at Moscot, Tenn., The American Cyanamid Company, as technical representative of the American Zinc, Lead & Smelting Company, has approved the STEARNS Type "MWI" Magnetic Separator for use in Heavy-Media plants. In operation in the Heavy-Media process in the concentrating of zinc ore, the STEARNS Type "MWI" Separator recovered better than 99.9% of the magnetic ferrosilicon.

The STEARNS Type "MWI" Magnetic Separator is equally adaptable for the recovery of media in Heavy-Media plants for the processing of all types of ores. This includes iron ores, fluor spar, rock products, coal, and similar materials. Specialized STEARNS Magnetic Separators are available for the recovery of other media such as magnetite.

Whether your problem is that of purification, reclamation, or concentration, STEARNS has a separator for you. From the fairly simple job of tramp iron removal to the concentration and beneficiation of complex ores, STEARNS has EXPERIENCE ENGINEERED equipment to meet your specifications.

Complete laboratory research facilities are available for thorough investigation of your separation problem. This includes a complete analysis of the practicability of applying magnetic separation, the testing of sample material, and the recommendation of specific magnetic separation equipment.



GRAB SAMPLES FROM THE MAIL

World Mining to Professor Lunn

Dear Sir:

During a very recent visit to Copenhagen I was discussing world problems relating to mining, mineral resources, etc., with my friend Professor Lunn of the University there and had occasion to refer to the wide cover of news that I got through the medium of **WORLD MINING**. Professor Lunn was most interested and would be very grateful to regularly receive **WORLD MINING**.

Yours faithfully,

Dr. G. Vernon Hobson
Woldingham
Surrey, England

"I Have the Honor . . ."

Dear Sir:

I have the honor to thank you for sending **WORLD MINING**, which I have received regularly and which supplies us with interesting news.

MINING WORLD is found in the library of the Ecole des Mines (School of Mines), very near to my office.

Very truly yours,

Chief Engineer of Mines
Director, Geologic Mapping Service
62 Boulevard Saint-Michel
Paris 6, France.

From Singapore to New Guinea

Dear Sir:

The April 15th issue of **MINING WORLD** contained first class and valuable information. It was very interesting reading, but please allow me to make the following observation. On page 93 mention is made of Celebes. However, the contents of this article deal with Banca and Billiton. Both of these islands do not belong to Celebes. Celebes is the queerly shaped island east of Borneo, and Banca and Billiton are near Singapore. It would have been better to title the article "Indonesia," which comprises all the islands between Singapore and New Guinea.

P. M. van Bosse
The Hague
Netherlands

Interested in American Diamond Drillers

Dear Sir:

I have the honor to let you know that I have been receiving **WORLD MINING** regularly with the exception of the August 1949 issue which seems to have gotten lost somewhere. I keep this magazine as complete as possible and would appreciate another copy of this issue.

For the moment I am interested in having the names of American firms who may be willing to consider some diamond drilling in this country on a contract basis.

Dr. N. H. van Doorninck
Addis Abeba
Ethiopia

Seldom Get News Otherwise

Sir:

We enjoy the **MINING WORLD** so much, living as we do back in the mountains, we seldom get news of that kind otherwise.

W. E. Moreland
Claraville, California.

MINING WORLD

WORLD MINING

The International Department of MINING WORLD

SAN FRANCISCO, CALIFORNIA

SEPTEMBER, 1950

INTERNATIONAL PANORAMA

WASHINGTON—The ECA has announced that about \$4,000,000 in counterpart funds will be advanced to the Societe des Mines de Zellidja to modernize and expand the output of zinc and lead from the company's mine at Bou-Beker, French Morocco.

CALCUTTA—Production of lead and zinc concentrates has been started from ore mined at Zawar, Udaipur State, by Metal Corporation of India. The district is one of India's first lead-zinc producing areas.

MARYSVILLE—The Atomic Energy Commission has announced plans for a diamond drilling program in this uranium district. Holes have been projected to a depth of 1,000 feet.

NEW YORK CITY—Imports of refined lead in the first five months were at a record annual rate. The five-month total was 167,109 tons with May imports at 49,865 tons.

ANSAN, MANCHURIA—Two blast furnaces and two open hearth furnaces are now in operation at the steel plant of the Ansan Company, and a third blast furnace will be in operation by 1951. The plant at one time operated nine blast furnaces and six open hearths.

ROME—A loan of \$1,494,180 has been approved by the ECA to the Societa Per Azioni Piombo E Zinco for the construction of an electrolytic zinc plant and auxiliary sulphuric acid plant at Noss, Italy.

MIDLAND—The price for magnesium ingots has been raised one cent a pound to 22½ cents.

RIO DE JANEIRO—The Export-Import Bank has granted a loan of \$25,000,000 to the National Steel Company of Brazil to expand steel output about 100 percent by the erection of a second blast furnace and two additional open hearths.

PITTSBURGH—The annual steel producing capacity of the United States passed the 100,000,000-ton mark on July 1.

BATON ROUGE—A 30 percent expansion in plant capacity at the Kaiser Aluminum & Chemical Corporation is scheduled. The plant produces alumina from bauxite.

BROKEN HILL, RHODESIA—Lead production will be increased to 1,500 tons per month by the Rhodesian Broken Hill Development Co. when its new lead recovery plant is placed in operation in 1951.

HIBBING—The Inter-State Iron Company has started two new Heavy-Media-Separation units. One is at the Grant mine and the other at the Hill-Annox mine.

PARIS—France has revalued gold at the rate of 350 francs to the dollar. The old rate was 119 to the dollar. Revaluation of the 486 tons of gold in government vaults yielded an additional \$360,000,000.

BIRMINGHAM—The Woodward Iron Company is constructing a new blast furnace at a cost of \$4,500,000.

TRENTON—The United States Steel Corporation is starting construction of a new cast coast steel mill near here. Minimum annual capacity will be 700,000 tons.

SPOKANE—The Kaiser Aluminum & Chemical Corporation will spend \$2,000,000 to add a seventh pot line at its Mead aluminum plant. This will increase the plant capacity by 3,000,000 pounds of aluminum per month.

WASHINGTON—The Munitions Board has disclosed that no large additional purchases of antimony, metal grade bauxite, lead, muscovite, rutile, refractory grade chromite, mercury, tantalite and vanadium are contemplated for the national stockpile.

MELBOURNE—The Korean war strengthened the shares of the Australian base metal mining companies. Value of gold mining shares continues to decline.

EAST CHICAGO—Inland Steel Company will increase steel-making capacity at its Indiana Harbor plant by 750,000 tons per year. Four new 250-ton open hearth furnaces and auxiliary facilities are scheduled for completion by early 1952.

WASHINGTON—Western European countries have received initial allotments totaling \$287,000,000 in Marshall Plan funds during the present fiscal year. Sixteen participating nations will receive assistance.

CLIMAX—To meet increased demand for molybdenum concentrates the Climax Molybdenum Company resumed a six-day work week on July 31.

SINGAPORE—Exports of tin concentrates from Malaya during the first seven months of 1950 were 46,684 tons compared to 50,627 tons in the same period of 1949.

SOUTHERN RHODESIA—The government-owned Que Que steel plant will be expanded at a cost of £11,000,000. The present 33,000-ton capacity will be increased to 109,000.

CELEBES—Fighting between Federalists and anti-Federalists has become so serious in the Celebes that all exploration work in the interior has been suspended. The Billiton Company and the East-Borneo Company have withdrawn their staffs.

ROME—The Azienda Minerale Metallici Italiani has been authorized by the Italian government to start development of uranium deposits in the Aosta Valley.

CALCUTTA—Extensive manganese deposits have been found at Kalahandi in Bihar. Reserves have been estimated at 1,000,000 tons.

NEW YORK—Despite high production of nickel demand has been so great that International Nickel Company has allocated available supplies to its customers.

Brazil's Steel Project Gets \$25 Million More

Further credit amounting to \$25,000,000 has been granted by the Export-Import Bank of Washington, D. C., to finance the expansion of the Cia. Siderurgica Nacional (National Steel Company) steel project at Volta Redonda, Brazil. The company has been negotiating with the bank for several months and terms agreed upon include repayment over a period of 20 years at 4 percent interest per year. The loan also is guaranteed by the Brazilian government and the Bank of Brazil.

The money will buy equipment to increase production of steel ingots from the present 343,000 tons annually to 662,000 tons, and to increase production of finished steel products from 301,000 tons annually to 467,000 tons.

The Export-Import Bank has made four other loans to the company amounting to \$45,000,000.

Zellidja Mines Granted Further Funds by ECA

The ECA has advanced \$4,000,000 more to the Societe des Mines de Zellidja for expansion of its zinc and lead facilities at Bou-Beker, French Morocco. These counterpart funds are in addition to the \$3,600,000 that the ECA advanced to the Societe through the Newmont Mining Corporation of New York recently.

As the French Moroccan company already is to spend about three billion francs of its own money, the entire program will cost over \$16,170,000, and production at completion of the program should amount to 120,000 tons of zinc and 85,000 tons of lead per year.

Niobium in Germany to Be Mined by New Firm

Niob-Bergbau Kaiserstuhl GmbH, recently was formed by the State authorities of South Baden and the French company Societe Produits Chimiques de Thann, Mulhouse, in order to exploit the niobium deposits near Kaiserstuhl.

The limestone containing the mineral koppelite (pyro-niobate of cerium, calcium, and iron, etc.) will be burnt on the spot, and the calcines will be sent to Mulhouse for further treatment. The ore reserves are estimated at several hundred thousand tons containing from 0.2 to 1.4 percent Nb₂O₅.



J. Howard Morgan, secretary-treasurer of the Cedar Heights Coal Company, Oak Hill, Ohio, makes that statement about the new International TD-24 working on the company's stripping operations. "We are completely sold on International equipment," says Mr. Morgan. "We use four units in our operation here and they can't be beat. In six months use we have had no repairs except one minor item. This TD-24 looks like it will duplicate the endurance of our International TD-18 which operated two years before the engine was touched."

This is a statement by one more highly satisfied TD-24 owner. Never before has a tractor been so perfectly adapted to strip mining oper-

ations. The broad range of speeds, eight forward and eight reverse, on-the-go shifting with synchromesh transmission and the separate forward-reverse shifting lever combine to make the TD-24 the ideal tractor for strip mining. When you add the unequalled ease of control provided by "Planet Power" drive you'll find the TD-24 a matchless crawler when there's dirt to be moved.

If you haven't already seen the new TD-24, now is the time to visit your International Industrial Power Distributor. Let him give you a demonstration of this "Champion of Crawlers." When you see it work you, too, will say the TD-24 is "perfect" for strip mining operations.

INTERNATIONAL HARVESTER COMPANY • CHICAGO

**Standardize
on Power
that Pays**



**INTERNATIONAL
INDUSTRIAL POWER**

CRAWLER TRACTORS • WHEEL TRACTORS • DIESEL ENGINES • POWER UNITS

The Deming mill viewed from the southwest. Ore arrives by rail or truck, passes to the crusher building on the right, then through sampling to fine-ore storage in the circular steel ore bins behind the flotation building. One ore bin can be seen at the left of the flotation building. Tailings is pumped to the disposal area through a four-inch pipe line which can be seen behind and to the left of the water tower.



DEMING—1950 LEAD-ZINC MILL

A. S. & R.'s new lead-zinc mill at Deming, New Mexico, illustrates the use of automatic control of modern equipment in a pre-engineered plant

What is newest and finest in lead-zinc flotation milling? American Smelting and Refining Company has recently completed and just put into operation a new 400-ton galena-sphalerite-pyrite flotation mill at Deming, in southwestern New Mexico, which may be the answer to that question.

The Deming mill is pre-engineered from start to finish. The plant layout, the buildings, the equipment and its manner of use, are the result of A. S. & R.'s observations in lead-zinc flotation in a variety of mills throughout North and South America. The crushing and grinding sections were designed for efficiency of power consumption, ready access, and ease of control. The flotation section was designed for economy, ease of operation, and high extraction in the treatment of the lead-zinc ores from the mining district around Hanover and Deming. The sulfide treatment plant makes a lead concentrate, a zinc concentrate, and an iron concentrate.

A Mill That's Easy to Operate

The Deming mill, like other new developments in industry, is a combination or integration of equipment into a final working unit. The result, in this instance, is a mill in which control, regulation, and service, both in material handling and metallurgy, are extremely simple, sometimes automatic; and in which metallurgical accounting has been greatly simplified.

Plans for a new mill to replace the Hanover and Magdalena mills had been considered for many years, but were postponed during the period of wartime shortages. Real planning was directed by D. J. Pope, general manager of the Western Mining Department, and F. V. Richards, manager of the Southwestern Division,

after the proper site, at Deming, had been acquired.

The mill was designed and constructed under the direction of Norman Weiss, milling engineer for A. S. & R.'s Western Mining Department, with the cooperation of T. A. Snedden, superintendent of the Deming and Ground Hog units, and H. W. Kaanta, milling superintendent of the Southwestern milling units. The F. C. Torkelson Company of Salt Lake City, Utah, prepared preliminary layouts and acted as consulting engineers during construction.

The Stearns-Roger Manufacturing Company of Denver, Colorado, completed detailed design and was the general contractor for building the mill. Construction was begun on June 6, 1949, and completed 10 months later in April, 1950. Frank E. Briber, metallurgical engineer for Stearns-Roger, was in charge of the work.

The Kansas City Structural Steel Company unified the plant by its fabrication and structural-steel work.

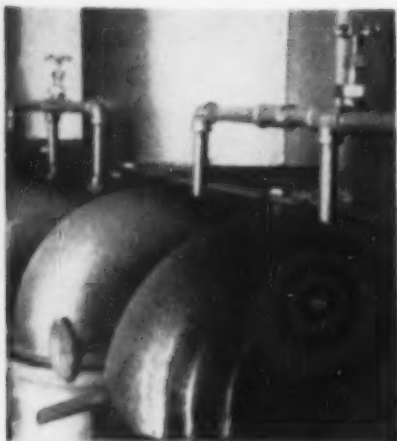
H. W. Kaanta is milling superintendent for the American Smelting & Refining Company at Deming. Originally from Colorado, he finds himself in charge of a mill which he helped design, and which is now described by some authorities as the "best in the world."



Modern Features of the Plant

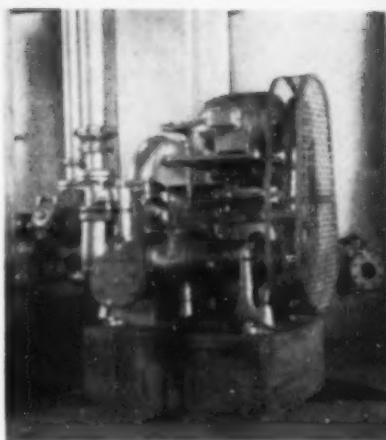
These are a few of the design and construction features of the new mill:

1. Automatic control of ore-handling and treatment equipment is used wherever the designers deemed it effective and economical.
2. The du Pont color code, used throughout the mill, clearly identifies the nature of equipment by its color. Red indicates fire protection; blue, electrical control; green, first aid and safety; yellow with black stripes, stationary hazards; orange is a danger signal; and all other colors have concise meanings.
3. The mill is built on level ground.
4. Use of artificial (fluorescent) light, and the exclusion of daylight in the flotation section assures uniform visual control by either day or night flotation operators.
5. Head pulleys for two conveyor belts are of a new J. D. Christian design called the Power-Package-Terminal. The pulley cylinder encloses the driving motor and gear-reduction unit in a simple compact installation.
6. Fine ore, as it is discharged from the cone crusher, is elevated to the screen above the crusher by a lateral uphill run of conveyor belting, a transfer tower, and a switchback run of belting.
7. The automatic-sampling installation delivers a cut and crushed sample at about 6-mesh size.
8. Fine ore and sample ore bins are equipped with high and low level indicators.



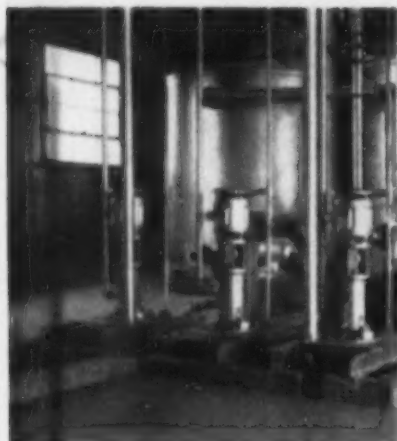
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Clarkson Model 8-2 reagent feeders in this line illustrate the tendency toward central reagent feeding in modern mill design. Reagents metered by these Clarksons are at the top level in the mill.



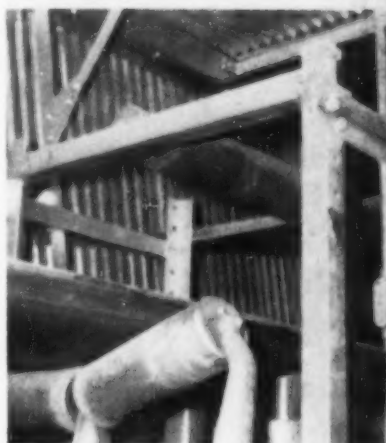
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The Wilfley Type K centrifugal sand pump lifts pulp from the 8 by 8 foot conditioning tank to the zinc flotation circuit on the floor above. This is one of the first installations of the Wilfley Type K.



←

The three Nagle Pumps in the foreground are used to pump spillage and wash down water back into the lead and zinc circuits. One pump is a spare.



→

The Dings Magnetic Detector is mounted above the 36-inch conveyor belt. It acts as a warning device, shuts down this belt and the pan feeders belts when it detects a large piece of tramp iron.



←

This head pulley is a J. D. Christian Power Package Terminal—a unique system of head drive in which the electric motor and driving gears are contained within the driving cylinder of the head pulley. The only rotating part is the pulley cylinder and its gear drive. The unit shown here has a magnetic brake and backstop. The two PPT head pulleys at Deming are among the first installations in the world.



→

This picture from above is a view of two "B" Frame Allen-Sharman-Hall Hydroscol pumps. The pump at the bottom acts as a discharge pump to meter zinc tailing from the tank on the left. The pump at the top acts as a booster to send tailing out the four-inch line to the tailing disposal area.

9. A system of volumetric above-the-belt feeders at the draw point from each of four fine ore bins allows precise control of blending the feed, and of overall rate of feed to the mill.
10. Flotation reagents are mixed, dissolved and standardized in a separate building beside the mill on the ground level. Reagents are then pumped to the top floor of the mill building for centralized feed to the flotation section.
11. Copper sulfate is fed to flotation as a solution.

Custom Basis On All Ore

The mill was primarily designed to process the sulfide ores from Ground Hog unit mines about 45 miles northwest of Deming at Vanadium, New Mexico. Approximately 300 tons of the 400-ton daily input to the mill comes from the Ground Hog unit, and is milled on a custom basis. The remaining capacity, nearly 100 tons daily, is available for custom milling of other similar ores from nearby lead-zinc mines.

A typical Ground Hog ore would contain 10 to 15 percent zinc, 2 to 5 percent lead, 2 to 5 ounces of silver, and 25 to 30 percent iron as pyrite. The ores in that vicinity, occurring as replacement deposits in limestone, have been previously milled at Hanover by A. S. & R. The Hanover mill was in effect the testing field for flotation methods which have been incorporated in the Deming unit. Deming replaces both the Magdalena and Hanover milling operations.

Operating personnel at Deming are experienced men from other company plants. Mill superintendent Bruce Matthews, foreman Boyd Rickman, and metallurgist Archie Romney formerly worked at Hanover or Magdalena.

Two water wells were sunk into the water zone to a total depth of 150 feet. A Johnston 300-gpm pump at each well delivers water to a 60,000-gallon storage tank at ground level and to a smaller elevated tank.

General Arrangement

The general arrangement of the Deming mill is that of a square. On the northwest side of the mill, a railroad siding system provides flexibility for weighing and dumping of incoming ore, placement of cars to receive concentrates, and for weighing, storage, and shipment of concentrates. Incoming ore travels from the railroad and truck hoppers on the west corner of the square to the crushing plant on the south corner, to the fine ore bins on the east corner, through the mill building which is the northeast side, and finally arrives as concentrate in railroad cars on the north corner of the square.

Space in the center of the square is used for thickener tanks, reagent feed

building, room for expansion, and access. Other services, such as water and electricity, which are needed in common by the entire installation are supplied from outside the square of the milling plant.

Runs of conveyor belting from one building to another are enclosed on a truss-supported walkway by a round topped corrugated steel shelter that is open on the manway side, but shields the belt system from wind and rain.

Interlocked Ore Conveyance

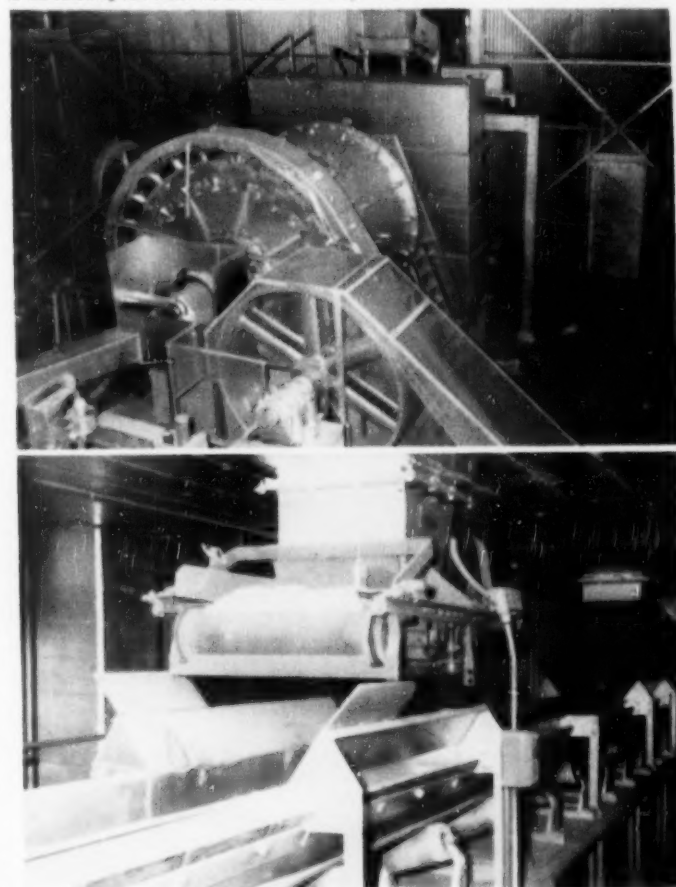
Ore arriving at the mill by truck is weighed on truck scales and dumped into a hopper which slopes downward at 45° in each of four directions, and is lined with railroad rails. It is fed by a 30-inch Pioneer pan feeder onto the No. 1 conveyor belt, a 36-inch Hewitt-Robins which travels at only 70 fpm and carries 80 to 100 tons

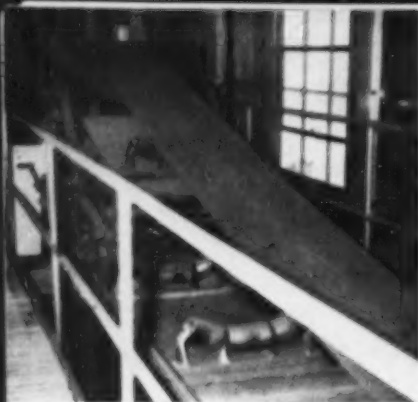
hourly. Ore arriving by rail is weighed on a 200-ton Ferguson track scale, dumped into two hoppers similar to the truck hopper, and fed to the No. 1 belt by two 36-inch Pioneer pan feeders, one feeding from each hopper. The feed picture, then, is the No. 1 belt receiving feed either from the truck hopper, or from the two railroad hoppers by two pan feeders placed crosswise to the belt and discharging at their center on the same No. 1 belt.

Moving toward the primary crushing section, the feed passes under a 36-inch Dings magnetic detector which is interlocked with the belt and feeder drives so that it stops the belt and feeders whenever it detects a sufficiently large piece of tramp iron.

To prevent a possible pileup of ore at any point in the mill, the entire ore conveyance system is interlocked by electrical relays so that a breakdown

Top: This view from above clearly shows the discharge box arrangement of the Marcy 77 ball mill, and the pipes for adding water to the discharge product. The rectangular box on the far side is the enclosure for the scoop which feeds the mill. The water feed to the discharged product is automatic, controlled by a pulp-density measurement device in the classifier. Bottom: Shown below is one of the Hardinge size CV volumetric belt feeders under the fine ore bins. Ore is fed to the collecting belt under the bins and then drops to another belt which carries it to the mill.





This Hewitt-Robins belt tripper can be positioned over any of the four 31½ feet diameter by 30 feet high steel orebins. The tripper must travel back and forth a distance of 60 feet to change dumping of the minus-½-inch ore from bin No. 1 to bin No. 4.

at any point automatically shuts off all prior conveyance devices. During repair and cleanup work, the operator can run the equipment manually, one piece at a time, by means of a selector switch.

The No. 1, 36-inch belt feeds ore to a steel grizzly with 3-inch spacing; undersize passes to the No. 2 belt, a 24-inch Hewitt-Robins, and oversize, after being crushed to minus-3 inches by a 24 by 36-inch Type H Traylor jaw crusher, joins the undersize from the grizzly.

Closed Secondary Crushing

To prevent retransport and re-crushing of the minus-¾-inch ore in the grizzly jaw crusher product, a completely closed circuit is used for secondary crushing. The closed circuit is accomplished by joining the products of the jaw crusher and secondary crusher on the same belt and passing them to a Robins Gyrex vibrating screen for sizing at ¾-inch; undersize from the screen goes directly to fine-ore storage. Oversize is crushed by the Symons cone and falls to the same belt. The mixed product from the jaw crusher and the Symons 4-foot Standard cone gains height by traveling outward and upward on the No. 2 belt, equipped with a suspended magnet, to a transfer tower building and then returning upward on the No. 3 belt, equipped with magnetic head-pulley, to the vibrating screen above the Symons cone. The advantage of this system of closed secondary crushing is an increase in capacity and a consequent decrease in power and maintenance costs.

The cone crusher motor is interlocked in a pressure gauge in the oil pumping system of the cone so that the crusher cannot be started until oil pressure reaches a safe operating point.

Bin-Level Indicators

The minus-¾-inch product travels on the No. 4 and then the No. 5 con-

veyor belts to four 350-ton cylindrical steel orebins. It may be dumped in any one of the four bins by simple positioning of a 20-inch Hewitt-Robins belt tripper. Ore arriving at the mill will be classified in one of four categories or grades, and each of the bins will be used for storage of a different grade of ore if necessary.

At the point of transfer from No. 4 to No. 5 belt, a Heginbotham automatic sampler cuts a 1/10 sample of the ore which is stored and subsequently crushed and reduced to a final minus-6-mesh product which constitutes 1/800 part of the initial feed.

The four fine ore bins are equipped with high and low level indicators to warn the crusher operator that a working bin is either full or empty. A duplicate set of lights, one in the crushing plant and one in the mill, shows the operator the status of each bin. When a bin is full, the operator sees the light and moves the tripper to another bin. Six small bins which are used to catch primary fine ore samples are equipped with similar lights to show the crusherman and sampler the status of each bin. The crusherman or sampler can position the shuttle car by remote control to feed one of the six sample bins by pushing a button on the control panel.

Blending—Control the Draw

Ore from the four fine ore bins feeds to a cross belt in such a way that feed to the grinding and flotation sections can be carefully regulated, either as to grindability or grade. The system of blending is accomplished by using multiple feeders. The end feeders are called "Santa Barbara-type." This is an inclined open-face gate-controlled chute from which the ore is drawn by motion of the cross belt. The three subsequent feeders are Hardinge CV volumetric belt feeders which consist of a small belt on 24-inch centers which feeds ore by dropping it about one foot to the 24-inch cross belt. Each Hardinge feeder is controlled by a Reeves drive; variation of the drive control and the feeder gate allows close adjustment of the volume of ore that is fed from any one bin.

As it passes along the 20-inch Hewitt-Robins belt from the fine ore bins, the feed is cumulatively weighed by a 20-inch Merrick Weightometer, then dumps to the feed hopper of the Marcy 77 ball mill.

Automatic Density Control

The Marcy 77 ball mill, fed by a combination scoop feeder, works in closed circuit with a Dorr 5-foot 0-inch by 25-foot 6-inch DFX rake classifier to produce a pulp for flotation that is 60 to 65 percent minus-200-mesh. At the overflow end of the classifier, a Foxboro density controller interlocked with a fresh water supply from a constant head tank regulates the pulp density of the feed

to flotation. The Foxboro unit measures pulp density by means of differential bubble tubes.

The ground pulp is pumped for flotation to produce first a lead concentrate, then a zinc concentrate, and finally an iron concentrate. The flotation section comprises a lead circuit of a bank of ten No. 21 Denver "Sub-A's" for cleaning and two Denver "Sub-A" cells for roughing, a zinc circuit of two banks of 12 No. 24 Denver "Sub-A" cells in parallel, and an iron circuit with three 56-inch Wemco Fagergren cells acting as roughers and two Denver No. 21 "Sub-A's" as cleaners.

Central Solution and Feed

Dissolving of reagents and feeding of reagents are considered as two separate steps at the Deming mill. To simplify the process of reagent handling a small separate solution building was provided alongside the mill building. All reagents are unpacked and mixed in that building in eight standard solution tanks. From the solution building, reagents are pumped to storage tanks at the top level of the mill building. Solution from each tank is metered by Clarkson reagent feeders to effect precise control of reagent feed and a resulting economy of consumption.

Reagents used in the lead circuit are sodium cyanide, zinc sulphate, sodium ethyl xanthate (Z-4), A. C. Co. No. 241, and methyl isobutyl carbinol. Zinc circuit reagents are calcium hydroxide, copper sulphate, A. C. Co. No. 241, sodium ethyl xanthate (Z-4), Barrett No. 634, and methyl isobutyl carbinol. Pine oil and Z-9 are used in the iron circuit.

Uniform Lighting

In many mills the character and intensity of the light in the flotation section changes from hour to hour. To avoid this, daylight was purposely screened from the flotation section of the Deming mill. Artificial fluorescent light from overhead fixtures provides uniform lighting around the clock.

Room for Expansion

To provide for more milling capacity to process ore from privately owned mines, adequate space for expanding the capacity of the fine grinding and flotation sections of the mill has been provided in the mill building. Because it is now capable of handling a 400-ton run in less than one eight-hour shift, the crushing section of the mill will not require enlargement. Room for a duplicate ball mill and classifier installation, a duplicate flotation section, and a duplicate section of filters and thickeners is provided alongside the existing units. Leeway for enlarging the concentrator itself has also been provided.

Concentrates of lead, zinc, and iron are pumped to respective Dorr thick-

eners. The flow of thickened concentrate from each filter is regulated by a Denver Equipment Company diaphragm pump at the underflow of each thickener. An Allen-Sherman-Hoff Hydroséal pump is then provided to boost the thickened concentrate to the filter units on the second floor, adjacent to the flotation section.

Concentrates are thickened on Elmco disc-type filters; a 2-disc filter is used for lead, a 5-disc for zinc, and a 3-disc for iron.

Three water circuits are used in the mill.

1. Fresh water is added principally to the ball mill and classifier circuit.
2. Overflow water from the lead thickeners is used only as spray water in the lead circuit; the shortage is made up with fresh water.
3. Overflow water from the zinc thickener is used as spray water in the zinc flotation circuit; excess from zinc and iron concentrate thickeners is wasted.

Products Conveyed to R.R. Car

The three concentrate filters are installed on the flotation level, the second floor of the mill. Zinc and iron concentrates are produced in sufficient quantity so that it pays to have a railroad car on the siding near the mill to catch these products as they are produced by the mill. The zinc

and iron concentrates fall from their respective filters directly onto separate 20-inch Hewitt-Robins belts which carry them clear of the building. An Atlas portable self-driven conveyor unit catches each of these two concentrates as they fall from the 20-inch belt for distribution in the railroad car. Lead concentrate, small in quantity, is dropped to the first floor of the mill as it is peeled from the Elmco disc filter. When enough lead concentrate has accumulated to fill one railroad car it is scooped up with a Hough Payloader.

Automatic Tailings System

Tailing from the flotation section, joined by overflow water from the iron circuit, goes to two cylindroconical sump tanks on the ground floor of the mill. Two Allen-Sherman-Hoff frame B Hydroséal pumps work in series from each tank to propel the tailing out over the four-inch pipeline 4,400 feet to and around the tailing dam. The first Hydroséal acts as a discharge pump to meter the flow automatically in accordance with the position of a pulp-level indicator in the surge tank; the second Hydroséal acts as a booster. The second surge tank for pumping into the same four-inch line, is a standby unit; failure of the first unit automatically turns on the standby unit. Each of the two sets comprises two Hydroséal Frame B pumps and a gland-water pump.

The line climbs vertically, then slopes downward to the point 700 feet from the mill, then upward for 2,100 feet to the dam. A solenoid, operating a dump valve at the 700-foot point, is tied in to the electrical circuit of the pump motors. When the pump motors quit running for any reason, the solenoid de-energizes, opens the dump valve, drains the contents of the entire line, and thus prevents the settling of solids in the pipe.

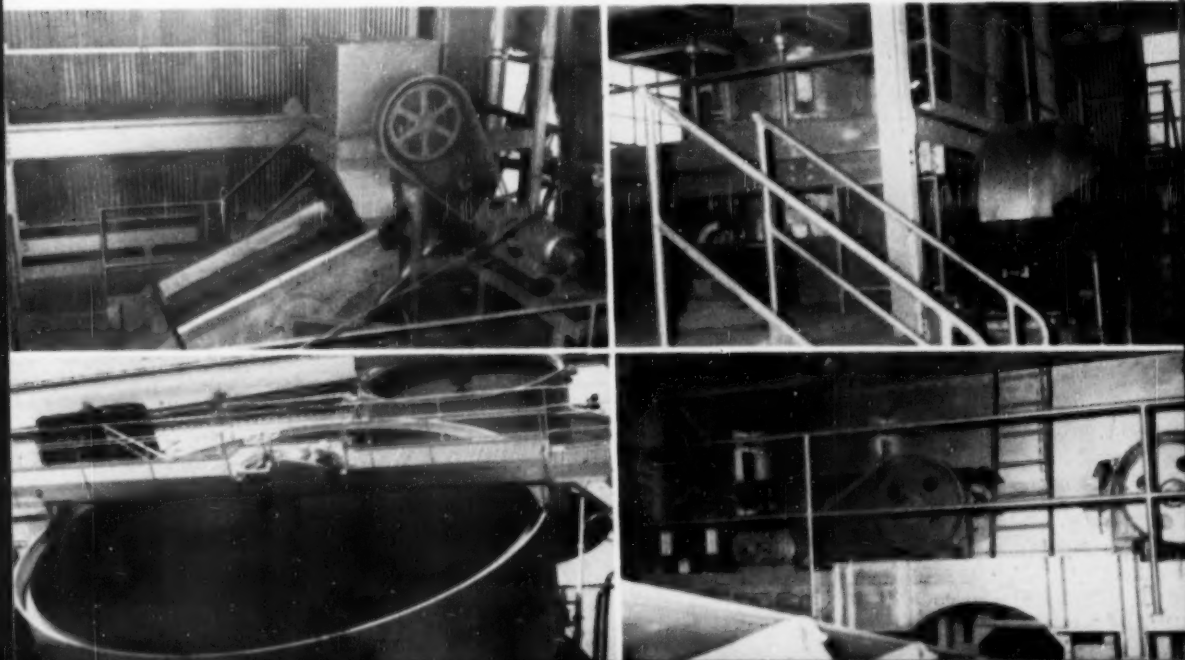
A Market and a Milestone

The Deming mill was designed to process ore with a maximum of control and a minimum of effort and supervision. Automatic control, probably used to a greater extent in this plant than in most mills of its size, is used at those points where the A. S. & R. Co. has found it to be economical. As Norman Weiss says in a recent paper for AIME, "The true purpose of automatic control is not to replace human skill and judgment, but to extend and supplement these."

From an economic point of view, the new mill provides a custom market for lead-zinc ores from the many small mines and prospects in the district.

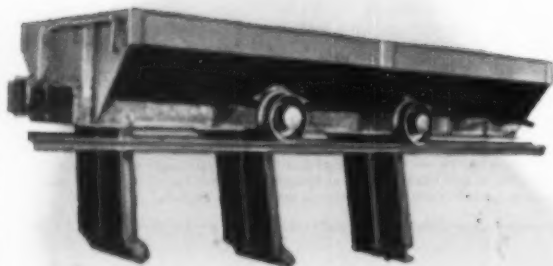
From a design point of view, the new mill is a forward step in the never ending perfection of modern milling plants. Though it certainly is not the biggest mill in the world, it is just as certainly one of the best.

Top Left: The Robins Style C7 Gyron screen is fitted with 1/2-inch screen. It receives feed from the belt on the right which carries it in from the transfer tower. Oversize drops to the Symons cone crusher below. Top Right: This installation of the four-foot standard Symons cone crusher provides access to any part of the crusher. A small sub-level platform has been built at the midpoint of the crusher; the lower part of the crusher is accessible from below, the upper part from the sub-level floor. Ore is fed to the crusher at minus-3-inch from the Robins screen above, is crushed to minus-1/2-inch and passes back to the screen. Bottom Left: The door Unit-type thickener in the foreground effects primary dewatering of the zinc concentrate. The smaller Dorr thickener in the background is used similarly for the lead concentrate. Bottom Right: Shown below are two Pioneer 36-inch pan feeders. The feeder on the left gets ore from the chute above it, feeds it to the 36-inch Hewitt-Robins conveyor system. Ore from the northerly railroad-bin chute is fed by the feeder on the right onto the conveyor belt which transports it to the primary crusher.





"WE SET



At the new Saginaw Mine, operated by Oglebay Norton & Company, the drop-bottom mine cars are equipped with Willison Automatic Couplers, NACO steel wheels and integral draft rigging. Cars were built by Watt Car & Wheel Company.

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Traction thickener and slime concentration plant at the Geevor mill. The Atlantic ocean can be seen in the distance.

TIN ORE DRESSING IN CORNWALL

Finely-Disseminated Cassiterite is recovered from Complex Ores by Gravity and Flotation Processes at the mills of the Geevor and South Crofty mines

**By F. B. Michell
Redruth, Cornwall**

Head of the Department of
Mineral Dressing
Camborne School of Mines

Cornwall, the cradle of tin mining, still has tin mines and ore dressing plants in operation. One additional mine is being reopened and the reworking of mine dumps and mill tailings continues on a small scale.

In general, the Cornish tin ores are moderately complex in point of metallurgical treatment and are characterized by very finely disseminated cassiterite (SnO_2). In many of the deep brecciated veins now being mined an appreciable portion of the cassiterite is less than 30 microns in size. This is an important factor to be considered in regard to plant flow-sheet, equipment used and overall recovery.

The associated minerals are arsenopyrite, pyrite, various copper sulphides, native copper, wolframite, iron oxides, and rarely scheelite, sphalerite and hematite.

Geevor Mine

At Geevor mine, situated only six miles from Land's End, the lodes are considerably brecciated, the cassiterite being finely divided and associated with chalcopyrite, bornite, covellite, chalcocite, pyrite, arseno-

pyrite, hematite and traces of bismuth, silver and gold.

In the dressing plant the mine ore first passes over a grizzly with 2-inch spacing, the oversize being crushed in a Blake type crusher and joins the grizzly undersize in a 400-ton ore bin.

Washing, Crushing and Grinding

From this bin the ore is removed by belt feeder, passes over a weightometer and is conveyed to a Pool washer, consisting of four cylinders, each 2 feet 6 inches in diameter, revolving around a central shaft. Trommel screens are fitted at the discharge end of each cylinder, separating the fines before they go to a Stokes double acting classifier. The oversize goes to a picking belt, at the end of which is a magnetic pulley to remove tramp iron. About five girls pick out pieces of granite wall rock and approximately seven percent of the ore hoisted is removed in this way, carrying only some three pounds of tin per ton.

The picked ore next passes to a Symons cone crusher, close circuited with a Hammer screen having a $\frac{3}{4}$ -inch aperture, and the undersize joins the sand product from the washer in a 600-ton fine ore bin.

Grinding is taken care of by one seven-foot Hardinge mill operating in closed circuit with three Hammer screens having 24-mesh stainless steel screen cloths.

The mill employs a maximum ball

loading of eight tons, and the new balls added are $3\frac{1}{2}$ inches in diameter. When they become worn to $1\frac{1}{2}$ inches they are removed and used in the middling regrind mill.

Classification

Comprehensive stage classification is employed, making 14 products for gravity concentration, and consists of first desliming in a 12-foot bowl classifier, the sand being split into 10 fractions, using a Stokes hydrosizer. The overflow from both the bowl and the hydrosizer is rethickened in an 18-foot tank, the overflow passing to the slime plant while the underflow is classified, making three more products in four, five and six foot cones and a final overflow to the "slime" plant.

Concentration

The first eight spigots of the hydrosizer are concentrated individually on Holman-James tables, making three products: a concentrate, middling, and tailing. The last two spigot products are treated on two 6-foot Frue vanners. A total of 15 vanners are used to treat the underflow from the three cones.

All table middling is dewatered in a belt drag classifier and ground in a $1\frac{1}{2}$ -foot Hardinge mill, after which the ground material passes to a six-spigot hydrosizer. The first five spigot products are treated individually on tables, and the sixth is fed to three vanners, and the overflow passes to the 18-foot thickener in the primary circuit.

As the Frue vanners only make two products, the tailing from the primary vanners is elevated to a Rickards-Janney classifier, the overflow from which passes to the 18-foot tank. The underflow is given a scavenging treatment on eight additional vanners before being discarded.

Slime Treatment

In this part of the plant all overflows from thickeners and cones, as well as the fines from the washer, are treated. The pulp is first thickened, using a 35-foot and a 70-foot thickener in series, the underflow from each being treated on stationary concave round frames constructed of concrete, 12 being used for the underflow from the 35-foot tank and four for that from the 70-foot thickener.

The concentrate from the 12 frames is classified, the underflow being treated on two vanners. The overflow joins the concentrate from the four frames, is thickened and treated on one wooden revolving table, followed by two vanners for cleaning the concentrate. All tailing from the concrete frames is scavenged on wooden frames before being discarded.

The tailings leaving both the sand and slime section are sampled daily and usually contain about four

pounds of tin per ton, while the sand product alone contains some 2.0 to 2.5 pounds of tin per ton. This tin is very finely divided and locked up with quartz and tourmaline, so that it is economically unsound to grind sufficiently fine to release any of the remaining cassiterite.

Retreatment Plant

In this plant, all table and vanner concentrates are treated to eliminate arsenopyrite, chalcopyrite and pyrite. The fine vanner products are treated directly by batch flotation. The table and coarse vanner concentrate is collected in a sump and pumped to the primary retreatment unit. Here the concentrate is classified into three products, using a hydrosizer; the first spigot product is conditioned in a horizontal paddle mixer with suitable reagents and treated on a Holman-Michell flotation table. In this process, large particles which are too coarse for successful froth flotation are floated, by means of air jets impinging on the table deck, and discarded. At the same time a concentrate containing over 50 percent tin is removed, as well as a middling, which is reground and returned to the classifier circuit.

The second spigot discharge runs directly to a Holman-James table making a concentrate for froth flotation and a tailing, which is returned to the grinding circuit, while the finest material containing a higher percentage of siliceous material as well as iron oxide slime released in grinding is passed to two vanners. The vanner concentrate goes to froth flotation. In this way, the primary table concentrate is upgraded before batch flotation, thus reducing the tonnage to be treated and, at the same time, all large particles of sulphides are removed without the need of fine grinding and resulting losses of tin by entanglement in the float product.

This flowsheet has been highly successful, as no cassiterite is now ground finer than its natural particle size to meet froth flotation requirements, as was formerly the case when all the concentrate was ground to minus-80-mesh, and the losses of tin by table flotation have proved to be lower than those from froth flotation.

With a feed to the Holman-Michell flotation table of 18 to 22.5 percent tin, the average concentrate carries 55 to 66 percent, the middling 22 to 42 percent, and the tailing around 0.8 to 1.0 percent tin.

In this way about 90 percent of the tin is in the concentrate and about 10 percent in the rejected tailings.

All concentrates, including those derived from table flotation (as some fine sulphides remain unfloatable) are treated in two M.S. batch flotation cells, and a rougher concentrate is rejected and a second or a scavenger product is collected and retreated.

REAGENTS USED IN TABLE FLOTATION

	Lbs. Per Ton
Sulphuric acid	2.38
Pot ethyl xanthate	0.30
Blast furnace creosote	1.18
Fuel oil	2.00

"Tinyard" for Final Treatment

The "sink" is stored and pumped to the final retreatment section, known as the "Tinyard" in Cornwall. Here the "sink" from flotation is finally treated in buddles after classification as shown in the accompanying flowsheet, the buddle concentrate being "tossed" for the market, while the middling is rebuddled.

The tailing from the coarse buddle is reground in a Hardinge mill and rebuddled to remove further tin, while the tailing joins that from No. 2 buddle and enters a pan-type grinder which discharges into a classifier, splitting the pulp into sand and slime, both of which receive treatment on tables. The tailing from this operation is again ground and retreated, the whole of the secondary concentrate produced in these operations being refloated and returned to the

classifier feeding the main buddles. The final concentrate assays over 70 percent tin, with less than 0.25 percent combined arsenic and sulphur. Recovery is around 78 to 80 percent.

There are a rather large number of Frue vanners in this plant which have a small capacity, but apart from this they do good work and represent a legacy from the old plant which were left on the site when the remainder of the plant was remodeled in 1938. At the present time some alterations are being made and some of the vanners will be replaced by tables. Had not the vanners been available it is unlikely that so many would have been included in the flowsheet.

Similarly the final dressing stage may appear antiquated with its buddles, but the tonnage being handled in this final dressing section of the plant is small, since the introduction of another cleaning stage incorporating table-flotation and further mechanization has not been considered justifiable.

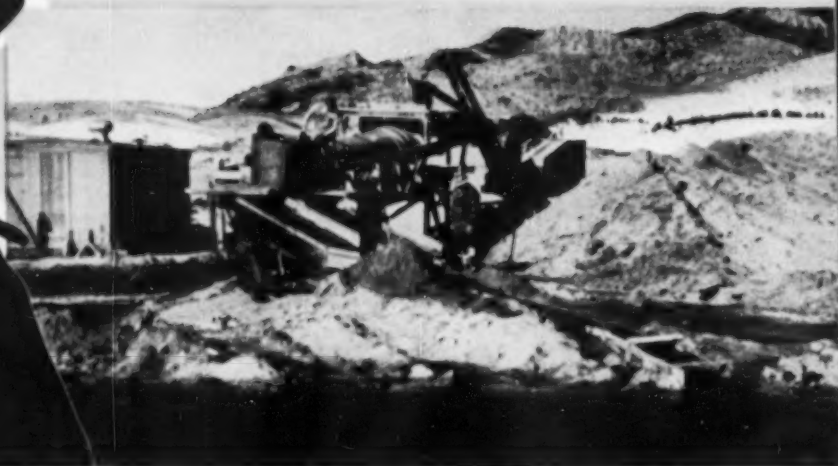
South Crofty Milling

At the South Crofty mine the ore is somewhat similar, but the cassit-

Top: At the Geevor mine the coarse crushing section adjoins the mine headframe. The fine crushing section is on the extreme left. Bottom: General view of the Geevor mill. The mine headframe is on the left.



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MOTOR GRADERS
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erite is coarse grained, little copper but abundant pyrite and arsenopyrite being present, and wolframite is found in certain sections of the mine.

The mill dates from the early years of this century and has not received any major alterations, excepting the substitution of table concentration for the older buddling in the tinaryard. The stamp mill has been retained, as well as roasting for the removal of sulphur and arsenic. All crude arsenic produced is refined by revolatilization, ground and packed in barrels for sale.

After crushing to minus-2 inches in jaw crushers, the ore is reduced to pass 14 mesh in 60 Californian stamps having a falling weight of 1,050 pounds each. The pulp is then classified into four products: Nos. 1 and 2, passing to 15 James tables; the third spigot product to 11 Frue vanners, and the overflow from the classifiers passes to seven James slime tables. The sand tables make three products: a concentrate for roasting, a middling for retreatment, and a tailing. The vanners and the James slime tables make two products only.

All the table middling is retreated on tables, then ground in a tube mill and retreated on vanners. The whole of the table and vanner tailing is next classified, rejecting the sandy fraction, and the overflow is thickened and treated on rag frames. The concentrate so produced is reconcentrated on round frames having concrete beds, buddled and sold as a low-grade product ultimately containing 26 to 30 percent tin.

In the retreatment section after roasting, the various primary mill products are kept separate. Concen-

TYLER SCREEN ANALYSIS OF TIN CONCENTRATE

Mesh	Percent Weight	Cumulative Percent
Plus 36		
Plus 52	0.05	0.05
Plus 65	0.63	0.68
Plus 85	0.72	1.40
Plus 100	1.90	3.30
Plus 150	16.25	19.55
Plus 200	18.45	38.00
Minus 200	62.00	100.00

TYLER SCREEN ANALYSIS OF TABLE FLOTATION FEED

Mesh	Percent
Plus 28	0.92
Plus 36	3.71
Plus 52	9.65
Plus 65	16.87
Plus 85	11.80
Plus 100	11.73
Plus 150	23.30
Plus 200	12.28
Minus 200	9.74

REAGENTS USED IN FROTH FLOTATION

	Concentrate	Flotation Middling	Secondary Tinaryard Concentrate
Sulphuric acid	850 c.c.	280 c.c.	850 c.c.
Ethyl xanthate	100 grams	50 grams	100 grams
Blast furnace creosote	200 c.c.	100 c.c.	150 c.c.
Fuel oil	100 c.c.		100 c.c.
Pine oil	200 c.c.	100 c.c.	150 c.c.

trate from the James sand tables is treated in a Wetherill magnetic separator after roasting, the magnetic material being reground and reconcentrated, while the non-magnetic material is reconcentrated on a table and finally "tossed."

The tailing from this final dressing operation is ground and retreated. Frue vanner and slime table concentrates are classified after roasting, concentrated on a table and vanners, and the resulting concentrate dried for a final magnetic separation.

The concentrate from the middling retreatment tables is concentrated immediately after roasting and ground before magnetic separation.

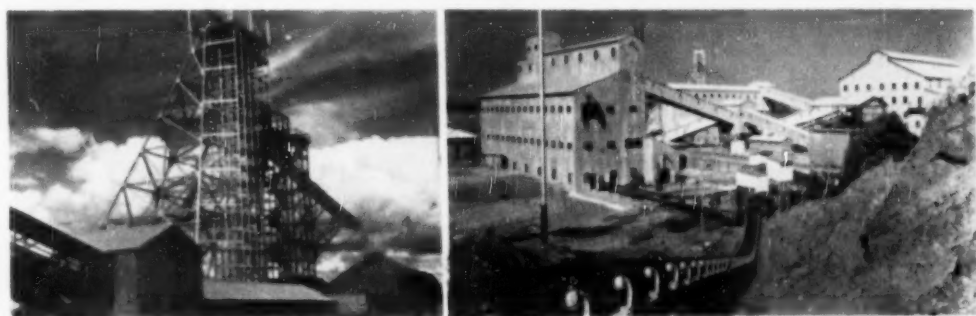
All tailing is ground and treated

on vanners, the tailing from these machines being passed over round frames. On leaving the magnetic separator, all fine concentrates are finally buddled and "tossed," the skimming from the tossing being added to the low-grade parcel.

Arsenic is recovered from chambers in the roaster flues and is refined by revolatilization, the final product having a 99.5 to 99.9 percent As_2O_3 content.

Bibliography

Bennetts, A. D., *Geecor Mill*, Trans. Cornish Inst. of Engineers, Vol. I, new series, Part I.
 Michell, F. B., *Dressing Tin Ores*, Mine and Quarry Engineering, Dec., 1945, and Jan., 1946.



—Pictures by Lou Leeson.

PREMIER—THE WORLD'S LARGEST HMS CONE PLANT

There has been so much interest and comment about the article on the HMS plant of the Premier (Transvaal) Diamond Mining Company, Limited, which appeared in the August issue of MINING WORLD that these pictures are published. They were received too late to be used with the original article. The picture at the left shows the main headframe of the Premier mine. Note that the skips dump directly onto the 2,000 ton stockpile. "Blue ground" is withdrawn from the stockpile by the conveyor shown at the extreme left. The picture on the right is an over-all view of the HMS plant taken from a point on the 3,000 foot long tailings conveyor. The four pictures of the equipment used in the plant which appeared in the August issue were also taken by Mr. Leeson through the courtesy of the Anglo American Corporation of South Africa, Limited, and their public relations officer.

Say 'Goodbye' to Nose Brick Troubles with



NO SHUTDOWNS for end brick replacement with this Allis-Chalmers air-cooled kiln end. The segmental alloy steel retaining ring, shown above, forms a channel through which a blast of cooling air is forced.

Result: No kiln warpage; refractory brick lasts as long at discharge end as at any point along the kiln.

This one feature alone will, during the working life of the kiln, pay for itself several times over in reduced downtime and increased production... in lower refractory costs and longer life of the kiln itself.

Air-cooled kiln end design makes possible the use of a *more positive* air seal, resulting in fuel savings.

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Allis-Chalmers rotary kilns are designed and built with a number of other important features:

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- ▶ Centralized instrument control of the entire operation located on single control panel.
- ▶ Modern heat recuperation equipment.
- ▶ Constant delivery feeders and all auxiliary rotary kiln equipment.

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PROMINENT MEN IN INTERNATIONAL MINING

Francis Thomas has been elected a vice president of Orinoco Mining Company, 25 Broad Street, New York, according to an announcement by Mack C. Lake, president. Thomas resigned as vice president of S. J. Groves & Sons, Minneapolis, to accept the appointment. The Orinoco company operates in Venezuela and is a U. S. Steel Corporation subsidiary.

DOUGLAS HEDDEN ALLEN of New York is now on the board of directors of Cerro de Pasco Copper Corporation, Peru. He is also president of Astoria Pan-American, Inc., Compania Astoria Peruana, S. A., and Astoria of Brasil, Inc., and is chairman of the board of Astoria Importing and Manufacturing Company and Otis Astoria Corporation. His address is 222 Eleventh Avenue, New York.



John E. Kelly, international consulting mining and metallurgical engineer, has opened a new office at 316 Southern Building, Washington 5, D. C. He recently returned from Venezuela, where he investigated iron ore deposits for several clients.

G. B. O'Malley, Australian technical representative for the American Cyanamid Company, New York, and associated companies, has returned to Australia from Fiji. Mr. O'Malley, who is president of the Australasian Institute of Mining and Metallurgy, took an opportunity to combine consulting practice with AIMM affairs. Malcolm Glen, field engineer for American Cyanamid, also has returned to Australia from the Philippines, where he assisted with the preparation of a Heavy-Media separation plant at Benguet Consolidated's Masinloc chrome property.

WILLIAM FLATOW has been named a vice-president of W. R. Grace & Company, international trading concern. He has been in charge of the Ore and Metal Department for some time and will continue to hold that position. He is a graduate of Berlin University; has worked for several German metal firms, and for Vogelsheim and Company in Montreal, Canada, New York, Chile and Peru. In Peru he also formed the South American Metal Company. W. R. Grace & Company is located at 7 Hannover Square, New York.



Les E. Harris has resigned his position of mill superintendent at The Cananea Consolidated Copper Company, S. A., mine, Sonora, Mexico. He now is a designer in the engineering office of the American Smelting & Refining Company, Smelter Department, El Paso, Texas.

Arno C. Fielder, chief of the U. S. Bureau of Mines' Fuels and Explosives Division, recently gave an address in France on the advances in mine safety evolved through 40 years of research by the Bureau. The occasion was the Sixth International Conference of the Directors of Safety in Mines Research at Verneuil, France, July 24-29.

J. F. Thorn has resigned as manager of Lake View and Star Ltd. and R. J. Agnew, a director of the company, has transferred from London to Kalgoorlie, Australia to succeed him.

G. Lindsey Clark, technical managing director of Western Mining Corporation, Australia, is on a trip to the U. S. A. and England, where he will observe mining methods and practices.

Gus Weggum, mechanical consultant for the M. A. Hanna Company is on a trip to his homeland, Norway. He has been with Hanna and Butler Bros. for 45 years.

R. B. Wokes has been named a director of Gold and Base Metal Mines of Nigeria, Ltd., London and Nigeria.

Dr. Robert J. Wright, geologist for the U. S. Atomic Energy Commission, is in Arizona examining radioactive samples from mines and prospects in the state.

Alvin C. Eide and Richard Alley Young have been named vice presidents of the American Zinc, Lead and Smelting Company, according to an announcement from New York. Eide has been with the company since 1916. Young since 1939.

Samuel H. Dolbear and Parke A. Hodges, of Behre Dolbear and Company, have been doing professional work in the potash area, Carlsbad, New Mexico.

J. Levin, research ore dressing engineer for the Union of South Africa, has been in the United States on a special scholarship awarded to him by the University of Witwatersrand for important work in ore dressing he has done during the past several years.

Rodolf Eichelster, general superintendent of the Austrian Alpine Montan, Eisenerz, Austria, is in the United States studying methods of mining and treating iron ore. His

company mines mainly by open-pit methods. The mine has a series of 80-foot benches extending 2,400 feet up a mountain and produces about 5,500 tons of crude ore per day.

WYLLIE L. GRAHAM, general supervisor of production planning for the New Haven and Trenton Works of the American Steel & Wire Company, has returned from an extended trip to Mexico and the West Coast of South America for the United States Steel Export Company. He is a well-known wire rope and aerial tramway engineer, who has spent many years in Latin American countries.



E. Benson, metallurgical engineer, has been made assistant to the manager of the personnel division of The Consolidated Mining and Smelting Company of Canada, Ltd., Trail, British Columbia.

Alfred Baer has been elected a director of the Zinc Corporation and of the Imperial Smelting Corporation, London. He also is vice chairman of the Consolidated Zinc Corporation. Captain A. H. Moreing, also on the board of Consolidated, has resigned as a director of Zinc Corporation.

Charles F. Allen is being addressed at 239 West Broad Street, Stamford, Connecticut, having returned from Johannesburg, South Africa. He had been working for the South African Cyanamide Company as technical representative.

GEORGE G. SHARP,

now a director of International Nickel Company of Canada, Ltd., Ontario, handled the legal affairs of the company for 25 years previous to his appointment. He also is a director of the American branch of Inco. The company recently started rationing nickel because of the present world situation.

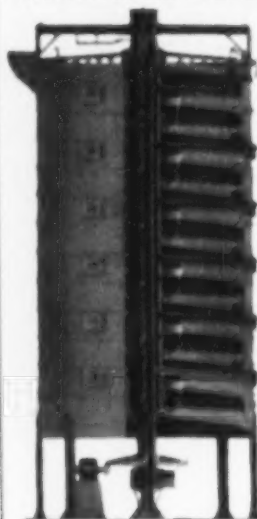


Mario Fernandez is in Chihuahua, Mexico, working as mine superintendent for the Minas de Iguala, S. A. He is a Colorado School of Mines graduate.

Ellis Dahlgren, tram expert, has been supervising tram building and consulting on tram problems in the United States and France for the American Steel Corporation. He recently was at Silverton, Colorado, on a combined business and pleasure trip.

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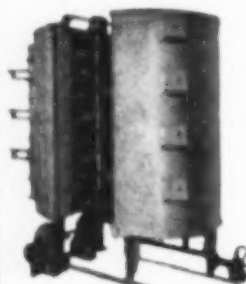


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IRON ORES	MAGNESITE
COPPER ORES	LIMESTONE
TIN ORES	MOLYBDENUM
NICKEL ORES	BONE CHAR
LEAD ORES	DIATOMITE
SODA ASH	LIME SLUDGE
FULLERS EARTH	MAGNESIUM
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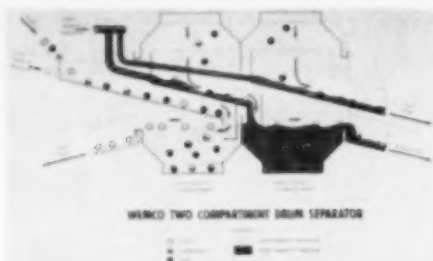
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WEMCO'S NEW TWO DRUM SEPARATOR

An important, completely new drum separator, designed to reduce the cost of multiple stage Heavy-Media separation, has been announced by the Western Machinery Company. Because it greatly reduces the equipment needed to produce a middling product, this multiple drum separator is expected to have wide application in the cleaning of low-grade coal and in the beneficiating of iron ores. Other ores and minerals can also be handled.

"Near Gravity" Problem for Some Ores

In coal cleaning and ore beneficiation, the HMS process generally separates run-of-mine material into two parts, a float fraction lighter than the media and a sink fraction which is heavier than the media. Usually, this is highly effective in separating desired material from waste. However, in low grade coal and ore, there may be present a substantial amount of "near gravity" material.

In order to efficiently obtain a middling product in the heavy-media separation process, two stages are required using heavy-media liquids of different gravities. A float product is produced on the lighter gravity media, a sink product in the heavier media, and a middling product between them. Heretofore, this has only been accomplished by using two separate drums or cones together with necessary screens, ductwork and auxiliary equipment. This is nearly equivalent to two complete heavy-media systems, and has made two-stage separation economically unfeasible in many instances.

Partitioned Drum Reduces Complexity

The new Wemco separator reduces the complexity of two-stage separation by using a partitioned drum with a lighter media in one section and a heavier media in the other. The sink and middling product from the first compartment are elevated by lifter bars and discharged directly into the second compartment. Only three conveyor systems leave the drum; they carry a true mineral product, a true waste product and a middling product. Recrushed portions of the middling product join the feed material and are returned to the drum.

Flexible Operation Possible

Individual units can be built to handle from 25 to 500 tons of feed per hour. Feed sizes from minus-8-inch to plus-3 16-inch can be successfully treated. Operation of the unit is flexible so that the first compartment can make either the high gravity separation or the low gravity separation with the second compartment making the other. Only one media cleaning unit and densifier are needed as the gravity of the media for each compartment can be regulated separately as desired.

It is expected that the new Wemco Two-Compartment Drum Separator process (patent pending) will obtain a clean product from coal and ore deposits for which profitable exploitation has not been heretofore feasible. Further information about the new separator may be obtained from MINING WORLD.

INTERNATIONAL NEWS

ECA Funds Advanced For Italian Zinc Plant

ECA has advanced \$1,494,180 for the construction of an electrolytic zinc plant at Nussa, Italy. The new plant will treat the low-grade oxidized zinc ores from Società per Azioni Piombo e Zinco's Gorno and Oltre il Colle mines and old mill tailings in northern Italy. Production is expected to be 10,000 tons of high-grade zinc and 10,000 tons of sulphuric acid annually.

The company expects to sell about 50 percent of the plant's zinc production and most of the sulphuric acid in the Milan markets and export the rest. Increased Italian consumption, however, make take all the production eventually.

The U. S. will be repaid over a period of 11 years with deliveries of zinc or lead metal to its stockpile.

Inland Steel to Expand Its Illinois Works

Inland Steel Company will increase its steelmaking capacity from 3,750,000 tons per year to 4,500,000 tons per year by 1952, according to Edward L. Ryerson, chairman. The company has engaged Arthur G. McKee & Company of Cleveland, Ohio, to construct an open hearth plant with four 250-ton furnaces and auxiliary facilities at the Indiana Harbor Works, East Chicago, Illinois.

Iron ore for the company's steel mills comes from its extensive mines in Michigan, Minnesota and Canada.

Promising Gold Strike Made in Argentina

A gold strike reportedly has been made in the Sierra de Aconquija, Province of Catamarca, Argentina, on government land. The vein, known as the Farellon Negro, and several nearby veins had been prospected for a year and a half by the geology and mining department of the University of Tucuman. The department's project was being abandoned when the strike was made.

In the main shaft on the property values were found between 100 meters and 150 meters, the bottom of the shaft. The sampled width of the Farellon Negro vein was about two meters, but since only its foot-wall is exposed in the shaft, it has an estimated maximum width of 30 meters and is believed to be about 14 kilometers long.

All development work in the mine to date has been done in the oxidized zone, where ankerite, quartz, and

oxides of manganese and iron are found. Small amounts of pyrite and other sulfides probably exist at depth. There is evidence that a zone of secondary gold enrichment lies below 100 meters. The outcrop is auriferous at all points, but lowgrade.

The government now is taking steps to explore and develop the vein with a substantial outlay of money in the hope that a large mine will be established.

Norway Increases Annual Aluminum Output

According to Johan Murer, managing director of Norsk Aluminium Company, Norway, which produced 35,000 tons of aluminum last year, could produce 90,000 tons per year and should be able to find a good market for that amount. About 50 to 60,000 tons could be sold in Scandinavia, alone, he estimates.

In line with this belief, Nordisk Aluminium Industry, a subsidiary of the Norsk company, is expanding its Holmenstrand factory at a cost of £800,000. The company is now producing 9,000 tons of aluminum, 16,000 tons of aluminum oxide, 10,000 tons of electrodes, and 6,000 tons of pig iron at its Hoyanger plant in western Norway. A large aluminum plant is planned at Sundalsøyra. The government-owned aluminum plant at Ardal is running at a capacity of 12,000 tons of aluminum a year.

Camas and Triumph Mines Installing Mills

The Hailey, Idaho, area will be the scene of much milling activity by the end of the year if both Camas Mining Company and the Triumph Mining Company finish their installations projects. Camas has a new 150-ton mill in which machinery is being installed now. This mill is a replacement of one which burned several years ago, at which time mining operations were suspended. However, for the past six to eight months the company has been blocking out and developing silver-lead orebodies in its Baltimore mine adjoining Triumph's land, according to G. P. Williams of Boise, president of Baltimore Mining Company which owns 60 percent of Camas. Williams also is president of Consolidated Smelting and Refining Company which is building the Hailey smelter.

The construction of Triumph Mining Company's mill is scheduled to be finished in December, barring unforeseen shortages of materials. The mill, with 200-ton capacity and a two-

circuit flotation unit, will cost \$350,000 and is being installed by Western Machinery Company of San Francisco. The plant design includes provision for the later addition of Heavy-Media-Separation and production of lead and zinc concentrates. This mill also replaces one burned several years ago.

Steve Mitchell, from Western Machinery's San Francisco office and job superintendent, said a field crew of 15 to 20 men were at work and that concrete foundations for the crusher, ore storage bins, and conveyor had been poured. Crude ore bins are being rebuilt. The mill building will be steel with corrugated iron sheathing, and by the middle of the month about 40 men will be employed on construction work.

Mexican Government Will Aid Small Scale Miners

Small scale mining in Mexico has been decreed substantial government aid by President Miguel Aleman in orders to the ministry of finance. Production tax discounts of 50 to 80 percent for the establishment and operation of small metal treatment plants will be allowed. The decree excludes already established mining tracts or groups of tracts controlled by one operator and having a monthly ore production of more than 1,500 tons.

A discount of 80 percent will be allowed for plants of up to 10 tons daily capacity and 50 percent for those of more than 10 tons, but not exceeding 50 tons daily. Beneficiaries must be legally registered concessionaires, lessors, or owners of a tract or tracts. Plant operators must report regularly the plant's monthly production to the ministry which must make a careful check-up.

The plants will aid small-scale mining by reducing greatly its costs, particularly for rail shipments, as these operators must now generally ship ore long distances to smelters and refineries. Besides, the decree stated that the plants will tend to make small-scale mining more national since present refineries and smelters are practically all owned by foreign companies.

Yugoslavia to Increase Molybdenum Production

To increase production of molybdenum for its steel industry, Yugoslavia is expanding the Markatica mine in Serbia.

Continued on Page 45

CURRENT REAGENT PRACTICE ON COPPER ORES



For the efficient treatment of non-refractory copper ores, Aerofloat® Flotation Reagents have long been favored by many leading producers because of their high selectivity, wide tolerance to changes in feed mineralization and the small amounts required to achieve optimum recovery.

Less well known is the use of Aerofloat Flotation Reagents (alone or in combination with other promoters) to recover copper values from refractory ores, especially where the selectivity of the reagents is of prime importance.

Data on the reagent combinations used for copper recovery have been reported from time to time in technical papers given before ore-dressing groups throughout the mining world. But much of that data is no longer current nor conveniently available to individual mill metallurgists and managers.

The Cyanamid Mineral Dressing Laboratory will soon issue an 8-page Technical Bulletin containing interesting resumes of the application of Cyanamid Reagents to a variety of copper ores in Canada, Mexico, South America, Africa, Australia and the United States.

Described are diversified applications of Cyanamid Reagents to ores having such mineral associations as:

- Bornite with Chalcopryrite
- Chalcopryrite with Pyrite
- Chalcopryrite associated with Sphalerite, Pyrrhotite and Pyrite
- Chalcopryrite with Magnetite and Pyrite
- Chalcopryrite with Galena and Sphalerite
- Bornite with Chalcopryrite, Enargite, Tennantite and Chalcocite
- Chalcopryrite, Covellite with Galena, Pyrite, Siegenite, Bravoite and Marcasite

Reagent combinations and feed-rates are given in detail with explanatory comment. Examples include both large and small operations and ores with values as low as 0.60% Cu.

Presenting timely, helpful data on the efficient use of Cyanamid Reagents is an integral part of our complete service to mills the world over. It is a logical extension of the work of the Cyanamid Mineral Dressing Laboratory in the creation of new reagents and the development of flow-schemes for the efficient treatment of difficult ores. It supplements the work of Cyanamid Field Engineers in the practical application of our reagents and processes on your mill.

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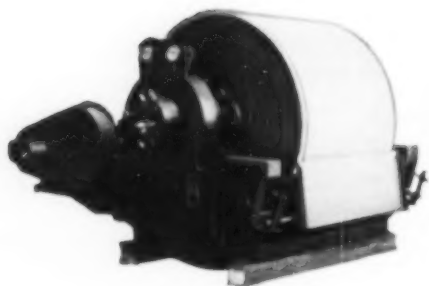
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RESEARCH — ENGINEERING — EQUIPMENT

INTERNATIONAL

(Continued from Page 41)

The mine operators are sinking a vertical shaft into the mountain on which the mine is located and are driving a three-mile-long adit to connect with the shaft.

As the molybdenum ore is mined, it will be transported through the adit to a flotation plant at the portal, assuring that mid-winter transportation problems will not impede production.



EUROPE

SWEDEN—During the five-year period ending in 1954 the Swedish iron and steel industry expects to spend Kr 391,000,000 for expansion purposes. Production will be increased from 2,215,000 tons to 3,562,000 tons or by 78.8 percent. This long-term program is accentuated by the planned European cooperation within the heavy key industries. Thorough reorganization, modernization, work simplification, and increased mechanization are aimed for. The difficult labor problem is expected to be facilitated greatly as not more than 18,160 workers will be needed after expansion, compared with the 15,967 now employed for less than half as much production.

ITALY—The *Dalmine Company* of Dalmine (Bergamo) has sold the asbestos mines of San Vittore Olona (Milan) to the *Eternit Company* of Genoa. The mines have a yearly output of 4,000 tons of asbestos. The Eternit Company is to purchase modern mining machinery in the U. S. A. with E. R. P. funds and will raise production to 16,000 tons yearly.

YUGOSLAVIA—According to reports, the *Zletovo* (Macedonia) Lead Mines' monthly production is now equal to the entire production in 1945. Recent prospecting has increased reserves to a 10- to 15-year supply. About 2,700 feet of drifting has been completed to open the new veins and shaft sinking is under way.

ROMANIA—German geologists have been engaged by the Government to do mining research in the Brasov district where Russian military authorities claim uranium should exist because of the existence of radioactive mineral waters. The research was started in July, and equipment and machinery is being supplied by Russia.

ITALY—A discovery of bauxite has been made in the Salentina peninsula, and the Chamber of Commerce of Lecce in Southern Italy has asked the Government for financial assistance to develop the resources.

Geologists estimate that the deposits contain enough ore for a yearly output of 40,000 tons for 20 years. Along the southern frontiers of Leghorn and Grosseto provinces zinc orebodies are reported to have been discovered. Unofficial estimates place possible output at 15,000 tons of ore annually for 30 years.

GERMANY—The increase in German steel production from its present annual quota of 11,100,000 tons to between 15 and 17,000,000 tons is forecast for authorization soon. The increase would lead to a much greater demand from Germany for base metals and to more severe competition within Europe between British, German, Belgian, and Swiss exporters. The rate of production so far this year indicates a 11,300,000 ton output for the year, so German producers hope authorization will come fast so that cut-backs will not be necessary.

ENGLAND—Among several mines reopening and expanding operations in England is the *Coaleleugh* mine at Carshields, Hexham, Northumberland. *Wardle & Ridley* of Haltwhistle are reopening this mine. Also, the *West Black Dene* mine is being opened by *United Steel Company*, which is sinking below the adit level. *Arthur Elliott* is managing this fluor-spar property. The *Coldberry* mine at Middleton-in-Teesdale is being worked for lead, and a new plant is

being erected. The only negative report which has been received is that the *Fluiniemere* mine at Newbiggin-in-Teesdale has been closed.

WESTERN GERMANY—Average monthly mine and smelter output of the chief nonferrous metals during the first six months of 1950 in metric tons:

Mine Output*	1949	1st Half 1950
Lead	3,410	3,620
Zinc	4,852	5,487
Copper	76	63
Smelter Output—		
Aluminum	2,403	1,475
Copper (refined)	12,154	15,545
Lead	8,554	9,648
Zinc	7,270	9,529

* Recoverable metal content.

SPAIN-ITALY—Quicksilver prices have been rising because of large sales by these two countries. Spain was said to have sold between 20,000 and 25,000 flasks recently. Their price is ranging between \$51.80 and \$53.20, compared with the old price of \$50.50 to \$52.50. Because of depletion of Italian stocks, their f.o.b. prices are higher than Spain's—which is not usually the case.

AUSTRIA—The *Alpine Montan Company*, which is building a rail and structural mill at Donewitz, has ordered \$1,000,000 worth of mill equipment from the Loewy Rolling



Courtesy of the U. S. Bureau of Mines.

FRANCE-U. S. DO SPONGE IRON RESEARCH

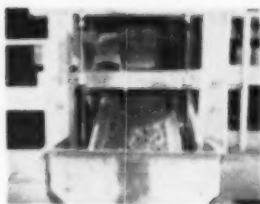
Research in producing sponge iron from the lowgrade ores of Normandy, France, is being conducted by the United States Bureau of Mines at its Sponge Iron Pilot Plant, Laramie, Wyoming. The French shipped 400 tons of their ore to Laramie at a cost of \$80,000 for the experiment. Studying ore samples are J. L. Gazelles, left above, French engineer, and Warren Mahan, Bureau of Mines engineer. Two other Frenchmen interested in the project also are at the plant. They are Pierre Henry, consulting engineer for the Mines Institute of Research at Paris, and J. Astier, his assistant. The men will return to France soon with several tons of the sponge iron pressed into briquette form and will conduct final tests to determine whether production of the material from their lowgrade (25 to 38 percent Fe) ores is feasible. The Bureau of Mines began large-scale experiments to produce sponge iron from U. S. ores when shortages of scrap developed during World War II. Sponge iron, like scrap, can be fed directly into open hearth furnaces.

FLOTATION FOR SELECTIVE... RESULTS

ARIZONA BARITE CO. USES...

DENVER FLOTATION EQUIPMENT

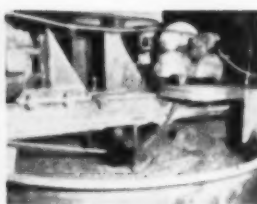
Following test work by U. S. Bureau of Mines, Arizona Bureau of Mines and Deco Ore Testing Division, a selective flotation circuit was added to the Arizona Barite operation to meet market specifications for Barite used by the oil industry.



SCREENING: Note the absence of fines on this 4'x8' Denver-Dillon Vibrating Screen. Such efficient screening is produced by the "circle throw" motion of the screen.



GRINDING: Up to 200 tons per day of 75% BaSO₄ is handled per day in this 5'x8' Denver Steelhead Ball Mill. Ball and liner consumption is low.



CONDITIONING: Classifier overflow is conditioned in a 5'x5' Denver Super Agitator. Flow of feed directly to agitation zone gives maximum reagent contact with pulp particles.

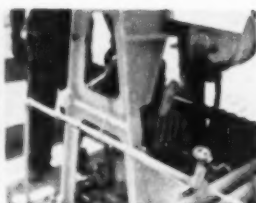
Complete Arizona Barite Company operating story appears in July-August 1950 Deco Trefoil Write, wire or phone today for detailed information on Deco ore testing and equipment service.



FLOTATION: Average feed per day is 125 tons of 75% BaSO₄. Grade of Barite is raised to 90% BaSO₄ in two 6-cell Denver "Sub-A" Flotation Machines operated in series.



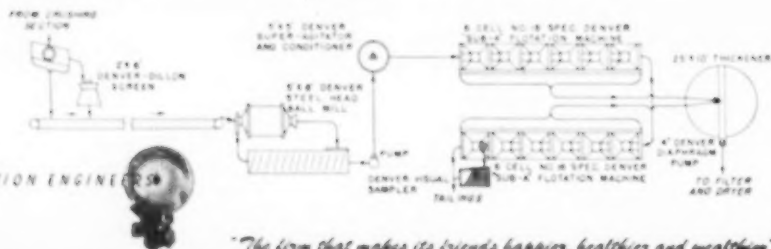
FLEXIBILITY: Each of the 12 Denver "Sub-A" cells produce a finished high grade concentrate. Note uniform bubble structure. Flexibility permits cleaning and reclaiming if ore changes.



PUMPING: A 4" Simplex Denver Adjustable Stroke Diaphragm Pump meters the flow of thickened pulp. Adjustable feature (while pump operates) permits critical Barite control.



FLOTATION ENGINEERS



"The firm that makes its friends happier, healthier and wealthier"

DENVER EQUIPMENT COMPANY, 1404 17th St., Denver 17, Colorado

INTERNATIONAL

Mill Division of Hydropress, Inc., New York City, New York. The order is covered by ECA funds.

YUGOSLAVIA—The Majdanpek copper and pyrites mine is prospecting for and developing new orebodies and is beginning construction of a new flotation plant, according to reports. Power will be supplied from the Kostolac Power Station. Construction of a railway line also is planned.



LATIN AMERICA

ARGENTINA—In announcing its profits for the past six months, *St. Joseph Lead Company* of New York advised that during the past three years over 5,000,000 pesos had been invested temporarily in bonds of the *Compania Metalurgica Austral Argentina, S. A.* The financing is enabling that company to complete installation of the electrothermic zinc smelter at Comodoro Rivadavia.

COLOMBIA—Regarding the steel mill to be built by *Empresa Siderurgica Nacional de Paz del Rio* at Belencito, reports from Bogota say that \$25,000,000 worth of equipment has been ordered shipped from the German company, Demag. The report also said that France had given *Empresa* a loan amounting to \$25,000,000 and that both France and Germany will supply engineers to help install the plant. The United States was reported recently to be involved in the project through the Arthur G. McKee Company, a construction and engineering firm.

MEXICO—According to reports a lead smelter may be built at Saltillo by the *Union Mexicana de Mineros*. Since at least two more furnaces are needed with a capacity of 150 tons daily in order to take care of the needs of the region, the proposed new smelter is a likely possibility.

MEXICO—Discovery of an important lead deposit at La Mina, Motolina municipality, Chiapas, was reported by Col. Gustavo Lopez Gutierrez to the Chiapas government. Samples of ore were claimed to have assayed 20 percent lead with some gold and silver.

BRAZIL—Cassiterite deposits have been reported found in the Rio das Mortes Valley and in Carandai, Minas Gerais. Brazil has been importing tin and experts say that the development of these new discoveries and several other known deposits would put Brazil in the position of exporting instead.

MEXICO—Mining in Sinaloa promises to come back after a long

slump according to the Ministry of National Economy in announcing that its mining agency at Mazatlan had granted exploitation franchises to mining tracts at Campanillas, Mazatlan municipality; La Gloria, Ampliacion de La Gloria and Colombia, San Ignacio municipality; and El Dorado, Ampliacion de El Dorado and Santa Juvenita, El Rosario municipality. The completion of new roads and an indication of tax relief for mining in the area are also factors in the comeback.

MEXICO—An emergency meeting of the state mining association of Chihuahua was held to try and work out answers to the mining problems in this state. Enrique Serrano, president, said the association would try to seek correction of the high taxes on smelters and refineries, and those plants' refusal to treat low grade ores; to overcome the difficulty in obtaining skilled miners; to arrange a protective state policy for small miners and increase credit for all Chihuahua mining; to improve transportation; to provide more and better outlets for export and better means for selling on the home market.

MEXICO—The Mexican mint at Mexico City, D. F., has intensified production of one-peso pieces and resumed that of half-peso bits besides continuing silver minting for Nationalist China, Ecuador, Syria, Arabia, and the Dominican Republic. The Bank of Mexico announced that during the past three years, Mexico

has used 959 metric tons of pure silver to make more than 64,000,000 coins for these customers, for which Mexico received 170,000,000 pesos (about \$30,000,000 at the varying exchange rates during the period).

VENEZUELA—The *Venezuelan Diamond Company* is preparing to mine diamond-bearing deposits near Peraitupuy, on the Gran Sabana, in southeastern Venezuela. The company is said to be the first to mine diamonds on a commercial scale in this country. Equipment worth 1,000,000 bolivars has been imported from the United States and Britain and installed.

PERU—Studies for the installation of an electrolytic zinc refining plant at Chimbote have been completed by Westinghouse International Electric Company, according to reports. Negotiations are under way to finance the project with Peruvian and foreign capital. The plant would have a capacity of 40,800 tons of zinc and 98,185 tons of sulphate of ammonia annually and would cost \$22,544,000.

VENEZUELA—The *Venezuelan Development Corporation* (*Corporacion Venezolana de Fomento*) has arranged a contract with the Canadian firm, Salem Engineering Corporation, to survey a site on the Orinoco River for a proposed steel plant with a daily capacity of 200 tons. If the plant is built there it will be close to large iron deposits and to the Caroni hydroelectric power plant. The company already has done about two



PERUVIAN MILL'S CAPACITY INCREASED

Compania Minera Atacocha, S. A., a Peruvian mining company, originally started with a capital of 1,100,000 soles and with an 80-ton-per-day concentrating plant. Now *Atacocha* is beginning to operate its new 150-ton-per-day concentrating plant and capital is 40,000,000 soles. The new installation includes an aerial tramway with a capacity of 20 tons per hour, and two 1,700 cfm. compressors. A 10-km. road has been built to connect the concentrating camp and the mine. Edgardo Portaro, Peruvian mining engineer, is managing director of the company.

years of research and will use the Wiberg-Soderfors iron reduction process if the plant finally materializes.



NORTHERN RHODESIA—Plans for the stepping up of lead production by the Rhodesia Broken Hill De-

velopment Company at Broken Hill have been announced by the chairman, S. S. Taylor. The Davis shaft will be deepened to open lower levels and additions to the lead treatment plant, expected to be completed by mid-1951, will raise output to about 1,500 tons per month. The new plant has been designed to recover lead from the leach residues of the electrolytic zinc process; these residues have until now been stockpiled, as they are not amenable to treatment by the existing smelting equipment.

FRENCH NORTH AFRICA—Al-

gerian and Tunisian production of phosphate rock is competing more and more strongly with Moroccan and American phosphate. Algeria and Tunisia produced 523,000 tons in the first quarter of 1949 and 550,000 tons in the first quarter of 1950. Corresponding totals for Morocco were 885,000 and 830,000 tons.

BELGIAN CONGO—The Geomines tin mining concern at Manono, north of Elisabethville, has received an ECA loan of \$1,700,000 to develop its mines. The company also recovers cassiterite, columbite, and tantalite, but will repay the loan in tin.

SOUTHERN RHODESIA—A plant is being built at Gwelo by Rhodesian Alloys Ltd. to process ores mined by Rhodesia Chrome Mines Ltd. The plant will smelt chrome ore and produce ferro-chrome, the latter to be sold primarily to Great Britain for the manufacture of stainless steel. Production is scheduled for June, 1952.

FRENCH WEST AFRICA—The first shipment of bauxite amounting to 10,000 tons has been made from the Iles de Loos by the Compagnie des Bauxites du Midi and is en route to Canada. The mining and exploration is advancing normally and an objective of 300,000 tons by 1952 will undoubtedly be attained.

ALGERIA—With the aid of Marshall Plan funds, the Nesloul lead mine not only is changing from the tunnel method to the openpit method of mining but also plans to install a new treatment plant nearby. Quarrying, washing, and flotation equipment have been furnished with the aid of U. S. funds. Other mines benefiting from Marshall Plan funds now are the Ouzegza openpit iron mine, the phosphate quarries at Kouif, the Ouarsenis and Guergour zinc mines, the Sidi-Kamber lead mine, the Beni-Saf iron mine, the Boudoukha lead and zinc mine, and the Ichmoul lead mine.

MOZAMBIQUE (Portuguese East Africa)—Mining men now think that a reef formation carrying uranium found near Tete may contain 100,000 tons of ore. The reef has a strike length of 6,000 feet and an average width of close to three feet, according to reports. Development is under way, and air prospecting of the area is being considered in order to try and locate more deposits.

NORTHERN RHODESIA—The program to increase production at the Nchanga Consolidated Copper Mines is now beginning to bear fruit, and output rose to 38,761 tons in the year ending March 31, 1950, as compared with 32,877 tons in the previous operating year. The final stage of the plan, which will bring production up to 64,000 tons annually, is expected to be completed by the end of 1950.

The GRINDING is MARCY at DEMING

Described in This Issue



The Marcy 77 Ball Mill at the Deming lead-zinc Mill.

Elsewhere in this issue is a detailed description of the new modern Deming lead-zinc Mill, designed for easy operation and close metallurgical control. All the grinding in this plant is handled by a Marcy 77 Ball Mill operating in closed circuit with a classifier.

The reason for selection of Marcy Low-Pulp-Line grinding is no secret—in this or any other milling plant. Here is what operators all over the world have been able to report:

- Marcy Low-Pulp-Line grinding utilizes power more efficiently. Grinding capacity is proportional to power input, and Marcy Mills have more capacity than conventional overflow mills, size for size.
- In Marcy Mills there is no wasteful overgrinding, and close control is readily maintained. Faster grinding results in lower per-ton costs and better metallurgy in the balance of the flowsheet.

Permit us to present field data that substantiate those statements. Our world-wide metallurgical experience of over a third of a century is at your service without cost or obligation on any grinding application.

OTHER PRODUCTS: Wilfley Concentrating Tables, Mason-Griggs Rubber Pinch Valves, Mason-Paterson Flotation Machines, Circulator Feed Controls, Density Controllers, Laboratory Jaw and Reduction Crushers and Pulverizers, Rock Bit Grinders, famous lines of mine and mill machinery, electrical, chemical, assay, laboratory and industrial supplies, and equipment for complete milling plants.

THE Mine & Smelter SUPPLY COMPANY
DENVER, COLO., U.S.A.

OFFICES IN El Paso, Salt Lake City, 1775 Broadway, New York, N. Y.
REPRESENTATIVES: Canadian Vickers, Ltd., Montreal, W. & J. Hudson, Santiago and Lima, The Edward J. Neil Co., Manila, P. I., The Ore & Chemical Corp., 85 Broad St., New York, N. Y., for Continental Europe.

The **NEW HYSTER GRID ROLLER**

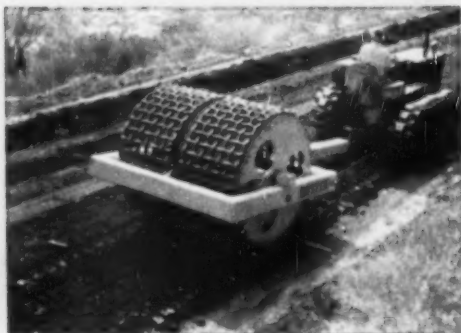


Revolutionizes Black Top Salvage Jobs

HOW IT WORKS...WHAT IT DOES

1. Black top is scarified by motor grader pulling Grid Roller.
2. Scarified black top is pulverized to a maximum of small "fines" by Grid Roller.
3. Pulverized black top is windrowed—road bed cleaned by motor grader—compacted by Grid Roller.
4. Windrow is spread and oil applied, material mixed and relaid and then compacted by Grid Roller. Now ready for seal coat.

SAVES UP TO 50% IN TIME...RECLAIMS MATERIAL



Saving in oil of \$343 per mile on a bituminous salvage job. Hyster Grid Roller pulled by a "Caterpillar" D4 tractor.

1. In ONE day ONE man with motor grader and Grid Roller can salvage and prepare ONE MILE of black top road for oiling.
2. Grid Roller produces greater abundance of FINE MATERIAL.
3. Oil usage reduced up to $\frac{3}{4}$ of a gallon per cubic yard—on one county road job a savings of \$343 per mile in oil was effected.
4. Grid Roller salvages all types of black top material. NO NEED TO HAUL AWAY OLD MATERIAL.

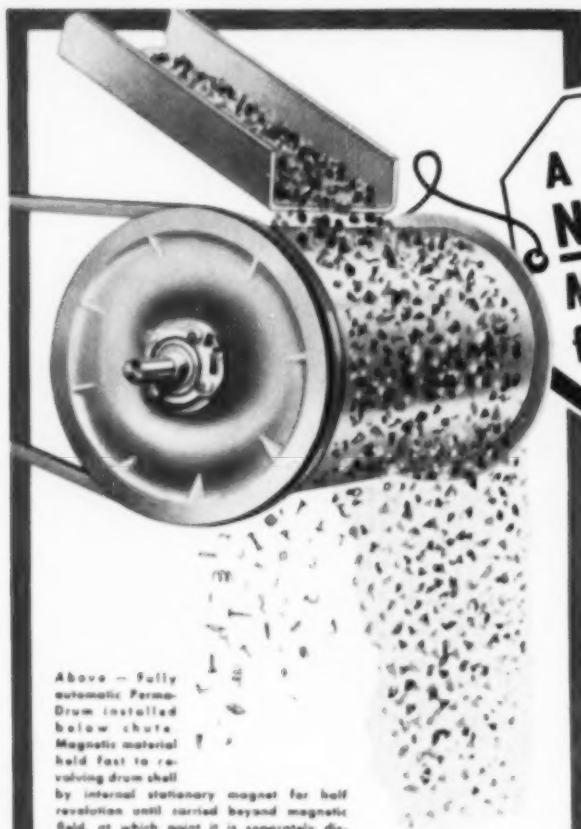
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A Powerful New NON-ELECTRIC MAGNETIC DRUM for the Mining Industry



Above — Fully automatic Perma-Drum installed below chute. Magnetic material held fast to revolving drum shell by internal stationary magnet for half revolution until carried beyond magnetic field, at which point it is separately discharged. Magnetics flow over drum in normal trajectory.



Left — Fully enclosed dust-tight drum type separator for installation at foot of chute or in duct work.



Left — Fully enclosed drum type separator with inlet spout and separate discharge spouts for magnetics and non-magnetics. Ideal for fully dust-tight installations.

The Dings PERMA-DRUM® Reduces Separation Costs

HERE is an outstanding new line of magnetic drum separators that offer advantages heretofore not available in this type of equipment. These drums incorporate many improvements over the old electromagnetic drums with which you might be familiar. Here are a few of the Dings Perma-Drum features: • Non-Electric, Self-Energized, Permanent Alnico Magnet—No Electrical Installation or Maintenance, No Current Consumption. • Magnetic Permanence Guaranteed Forever—Unconditionally. • Abrasion-Resistant Drum Shell Made of Armor Plate for Extreme Wear Resistance and Exceptionally Long Life. • Not Affected by Weather Conditions—Heat and Cold or Water. Withstands Temperatures Up to 600° F. • Extremely Powerful—Tremendous Surface Strength and Greater Magnetic Separating Power than Electro-Drums.

For purification, concentration or tramp iron removal, investigate the Dings Perma-Drum.

**DINGS MAGNETIC SEPARATOR
COMPANY**

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WRITE FOR CATALOG

New Perma-Drum Catalog gives complete data on construction, sizes, capacities, etc. Includes typical installation diagrams. Free on request.

DINGS
Certified
MAGNETIC STRENGTH

YOU WON'T SAY
"DANG IT"
IF YOU
"DING" IT

Total ore mined last year amounted to 1,282,047 tons, of which 1,275,400 was treated. The average grade was 4.84 percent Cu, 2.27 percent of which was in oxide form, and the remaining 2.57 percent occurring as sulphides. According to expectations, the refinery in Northern Rhodesia will reach a capacity of 124,000 long tons per annum by the end of this year, and the whole of Nchanga's output will be then in the form of electrolytic copper.



OCEANIA

EAST SUMATRA—The Bengkalis gold dredging company, which operated before the war in East Sumatra, reports that a representative of the Board has visited the concession and that in his opinion the destruction is not so bad as was feared.

NEW SOUTH WALES—North Broken Hill, Ltd., has started large-scale work to enable operations at depth in its New South Wales mine. The main, No. 2, shaft has been sunk to a depth of 3,220 feet. A new shaft joining the main shaft and the De Bavay fault has been started, will be concrete-lined with steel sets, and will be elliptical in section. It is the first of its type in Australia.

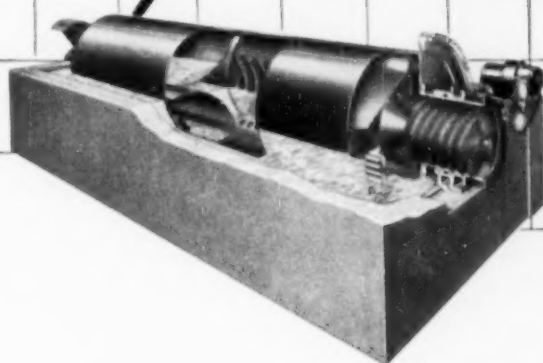
SOUTH AUSTRALIA—Zinc Corporation has started diamond drilling of large pyrite deposits at Nairne, near Adelaide. The first holes will be drilled to a depth of 500 feet, according to reports.

PHILIPPINES—Lepanto Consolidated Mining Company celebrated the opening of its expanded milling plant at Baguio on the 4th of July. During the month of June the company had conducted experiments with the operation of its new plant. Now it is operating on a basis slightly in excess of 1,000 tons of ore per day. Lepanto's production for the first six months of 1950 totaled 111,526 tons valued at P3,614,395 (\$1,807,198). This output compares with 85,600 tons valued at \$1,488,880 for the corresponding period of 1949.

WESTERN AUSTRALIA—Because of the unwillingness of shareholders to finance further exploration, directors of Dundas Gold Mines N. L. have granted a one-year option of the property to Central Norseman Gold Corporation. Full purchase price is £A10,000. Directors were authorized to dispose of the assets of the company. Plant and machinery were not included in the option.

NEW ZEALAND—Reports state that the New Zealand Cabinet has approved expenditure of £80,000 sterling to investigate the possibilities of using geothermal steam to

**SPEED UP PRODUCTION...
SAVE FLOOR SPACE AND DRIVE-POWER
WITH THE IMPROVED
CALCINE COOLER**



Designed for maximum efficiency, the Stearns-Roger Improved Calcine Cooler handles large tonnages of hot material with a minimum of shell length, resulting in a corresponding saving in floor space.

The inside of the Improved Cooler shell is divided into three sections. Holes in the outer shell allow free access of water between each of these sections thereby **approximately doubling the cooling surface** provided by a cylindrical section.

For specifications write for the Calcine Cooler Bulletin.

- BUILDERS
- DESIGNERS
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For The Mining and Process Industries

Stearns-Roger
THE STEARNS-ROGER MFG. CO. DENVER, COLORADO

35-TON



**Hauling up 10% grades
...loads weigh 37½ tons**

On bench stripping operations at their Bagdad, Arizona mine, the Bagdad Copper Corporation brought in two 35-ton, rear-dump Tournareckers . . . teamed them with a 4-yard shovel . . . and report the following big-tonnage results:

Each big-capacity LeTourneau rear-dump rock wagon is loaded with 6 to 7 passes from the well-heaped 4-yard dipper in less than 2 minutes . . . and, according to actual weight test, loads carried average 37½ tons. Hauling these oversize loads along narrow benches . . . down

10½% grade for 450 feet . . . then, up 660 feet at 10%, each Tournarecker averages a 4510-foot round trip every 11.2 minutes, including load, haul, dump and return. Giant, 4-wheel air brakes, and positive electric power steer let operators haul in 3rd gear along the benches with complete confidence and safety. On the 10% mine grades, Tournareckers climb easily in second, with full loads. Pull is exceptionally smooth because of power-proportioning differential, which automatically delivers 4 times the power to drive wheel on firmest footing.

On the spoil bank, these husky haulers also show a lot of speed advantages, 90° turns, controlled by push-button electric steer, give fast, easy spotting. Power on front drive wheels lets Tournarecker back up clear to edge and dump over bank . . . eliminates most clean-up. Simple electric

LETOURNEAU **TOURNAROCKERS**

HIGH SPEED on RUBBER PLUS TRACTION ADVANTAGES of a CRAWLER

TOURNAROCKERS

Speed Stripping

for Bagdad Copper



hoist raises body to vertical position . . . smooth, streamlined bowl clears the 37½-ton loads in an average of 38 seconds, total hoist and dump time!

Sizes: 50, 35, 16, 9 tons

Like Bagdad Copper Corporation, it will pay you to investigate the big tonnages and new low hauling costs possible on your work with these revolutionary, rear-dump rigs. Remember, too, with every size Tournarocker . . . 50, 35, 16 or 9 tons . . . you have money-saving interchangeability with Carryall scrapers, cranes, flat-beds and many other auxiliary hauled units. That assures greater operating flexibility and steady earnings the year round! Your LeTourneau Distributor has all the facts . . . call him for more information . . . write NOW.



PUTS LOAD OVER EDGE OF BANK

In dump position, back end of Backer body is below rear wheels . . . bowl rests on edge of bank . . . loads dump clear. Positive holding action of big 4-wheel, disc-type air brakes makes this operation safe. With power on front wheels, drivers are always on firm footing for quick, easy pull-away from edge.



BAGDAD COPPER ALSO USES TORNADOZER

Rubber-tired Tornadozer is Bagdad Copper Corporation's high-speed handyman. Its 180 "horses" on 21.00 x 25 tires give quick, "run-anywhere" service for clean-up around the shovel, haul road maintenance. Rear-mounted PCU makes it readily available for use with 4-wheel scraper, Backer, or other cable-operated tools.

Mail today to: R. G. LeTOURNEAU, INC., Peoria, Illinois

Send us specs., price and performance data on ☐ 50 ☐ 35 ☐ 16 ☐ 9-ton Tournarockers. ☐ Also send facts on 180 h.p. rubber-tired Tornadozer.

NAME

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COMPANY

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STREET

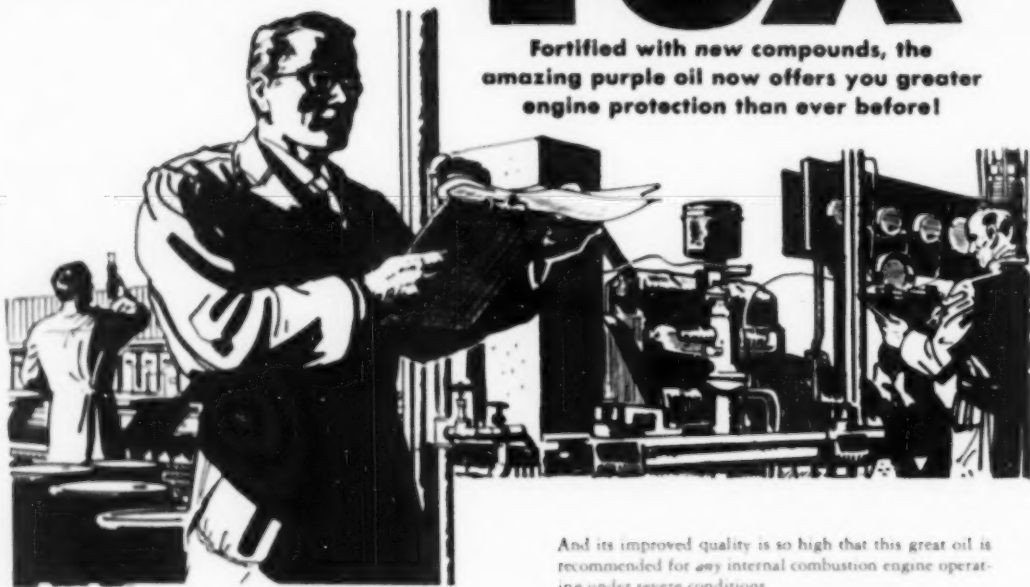
CITY

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Have you heard about the ***NEW*** **T5X?**

Fortified with new compounds, the
amazing purple oil now offers you greater
engine protection than ever before!



Surpasses "Supplement 1" specifications

The amazing purple oil is now better than ever! With even greater alkaline reserve, oxidation resistance, detergency and other upgraded qualities, the new T5X surpasses the exacting standards of U. S. Army Specification 2-104B, Supplement 1.

Its superiority has been clearly established in both the Coordinating Research Council gasoline engine tests and the rugged "Caterpillar" Diesel tests.

Protects any internal combustion engine

Powerful new additives have been compounded with a high VI, pure 100% paraffin base to form the new T5X.

Proved under critical field conditions

Field tests made by outside companies under critical operating conditions have also proved the amazing stability and performance of the new T5X in all types of equipment — including trucks, tractors, construction equipment, marine engines and varied types of stationary engines.

Substantially reduces engine wear

What the new, unusually high quality of T5X means to you is the opportunity for increased engine efficiency, less wear and lower maintenance and repair costs. And you can prove this for yourself by giving the new T5X a trial in your own equipment operating under severe conditions.

For full information about the new T5X, call your Union Oil Representative.
Or write, wire or call Sales Dept., Union Oil Company, Los Angeles 17, Calif.



UNION OIL COMPANY OF CALIFORNIA

INTERNATIONAL

generate power for industrial purposes.

QUEENSLAND—Yearly production figures in tons for *Mount Isa Mines, Ltd.*, and *Mount Morgan, Ltd.*, are as follows:

Mount Isa (for year ended June 30)		
	1949	1950
Ore	611,270	531,810
Lead	37,155	32,061
Zinc concentrates	46,578	41,742

Drop in production was attributed to the coal strike of July-August, 1949.

Mount Morgan (for year ended June 25).

	1949	1950
Ore	2,190,857	1,769,024
Gold (oz.)	58,663	80,847
Copper	3,523	4,260

Copper and gold output was thus greater from a decreased tonnage.

PHILIPPINES—An economic mission sent from the United States arrived in Manila on the 10th of July to make a study of the economic problems of the Philippines with a view of recommending measures of self-help to be adopted by the Philippine Government. The report is expected to indicate how the United States can most effectively assist in rebuilding the country's "badly shaken" economy. Philippine authorities feel hopeful that the United States Government will grant considerable financial aid to the Islands, enabling them to lift many of the import controls for essential commodities. Present restrictions have resulted in an all-time low in cargo arrivals at the Port of Manila on many items.



NORTH AMERICA

ONTARIO—Mines Minister Gemmell advised that a new sintering plant may be erected in Ontario by the *North Range Mining Company* of Negaunee, Michigan. The company is investigating the possibilities now, and if the plant should be built its capacity would be about 500,000 tons of sinter annually. North Range is drilling on its property near Atikokan, 120 miles west of Port Arthur, and about 10,000,000 tons of iron ore with a 20 percent sulphur content is estimated to exist, according to reports. As this ore has a sulphur content too high for direct roasting, arrangements would have to be made, probably with the *Steep Rock Iron Mines, Ltd.*, to purchase lower grade ore for mixing purposes so that roasting would be possible.

ALASKA—Production will be resumed soon at the *Hirst Chichagof* mine on Kimsham cove, 40 miles north of Sitka. The mine is said to be the second largest hard rock gold producer in Alaska and one of the first to resume production since the 1943 wartime closures. About 50 tons of ore per day can be treated by amalgamation and flotation processes. Paul M. Sorenson made the announcement.

YUKON TERRITORY—A new ball mill to raise capacity from 250 to 600 tons per day will be installed by *United Keno Hill Mines* at Mayo, according to reports. The company does not expect to utilize the mill's full capacity at once, but needs additional milling facilities to treat development ore from its mines in the Galena Hill region. The present mill can handle ore from the *Hector* mine only. In the quarter ended June 30, production amounted to 840,000 ounces of silver, 1,800 tons of lead, and 860 tons of zinc. The company eventually plans to develop its Keno Hill holdings and build a mill on this property also, so that total production in two or three years may be doubled.

IDAHO—Production from *Silver Syndicate, Inc.*'s mine near Kellogg

has been higher in the last six months than in a corresponding period in the mine's history. A total of 28,615 tons of silver-lead ore was mined. From this tonnage 576,795 ounces of silver and 3,180,344 pounds of lead was extracted.

BRITISH COLUMBIA—At an approximate cost of \$250,000, The Consolidated Mining and Smelting Company of Canada, Ltd., plans to construct a new one-story pump house, 36 feet wide, 58 feet long, and built of reinforced concrete. Located at the main reservoirs adjacent to the metallurgical plants at Trail, the building will ultimately house all pumps delivering water to the plants. The current project will be the first part of a larger building which will be constructed as required. A new 6,000 gpm. pump, powered by a 1,400 hp. synchronous motor, will be installed. A header for future pump installations will also be included as well as provision for future relocation of existing pumps. Cominco's Trail operations use 50,000,000 gallons of water per day.

WASHINGTON—A seventh potline will be added to the Mead reduction plant near Spokane by *Kaiser Aluminum & Chemical Corporation*.



NEWFOUNDLAND PROSPECTS BY AIR

A Canoe amphibious airplane is being used by Aeromagnetic Surveys Ltd. to carry out an aeromagnetic mineral survey covering 5,000 square miles of territory in the central-northern part of Newfoundland for the Provincial Government. The survey, probably the largest of its kind yet conducted in Canada, will cost about \$180,000 and is being directed by Claude K. Howse, government geologist for the Newfoundland Department of Natural Resources. In the top picture the detector head of the magnetometer, which is sensitive to variations of the earth's magnetic field, is carried in the cylindrical metal "bird" mounted in the tail of the plane. The bottom picture shows equipment installed inside the plane to amplify and record the variations, enabling the trained geologist to determine the possible presence of ore deposits beneath the earth's surface. The magnetometer, designed by the Photographic Survey Corporation, Ltd., Toronto, is the result of intensive engineering and flight testing and uses the latest techniques in electronic magnetometry. Flight lines are spaced at quarter mile intervals in areas of particular interest and at half mile intervals otherwise. The flying will take three to five months, and the entire job should be finished in early 1951 after aerial contour maps, interpretations of photographs, and field work are completed.



New POWER FEEDS for *Thor* DRIFTERS

SENSITIVE CONTROL...

✓ Fast feeds, slow feeds (as slow as 2 inches per minute!) rapid return and advance, all controlled from one infinitely variable throttle for top performance under all conditions.

✓ Carbide bit breakage virtually eliminated... even inexperienced drill runners can hold bit against bottom at correct feeding pressure to eliminate bouncing, hard vibration, bit breakage.

AMAZING POWER

On the job demonstrations of new Thor Power Feeds now being arranged! See how these powerful, precision controlled drive units can *save you money*—EXTRA FOOTAGE, LESS MAINTENANCE, FEWER STUCK STEELS, ALMOST COMPLETE ELIMINATION OF BROKEN BITS.

For use with powerful No. 82 and 92 Thor Drifters, new Power Feeds are available in three sliding cone shell lengths—24"x24"; 30"x30"; and in a new stress-proof aluminum shell, 48"x48", weighing actually less than the 30"x30" in steel!

Thor's tremendous advances in Drifting technique are worth investigating—write or wire for a Thor service engineer today! Independent Pneumatic Tool Co., Aurora, Ill.

NEW THOR TOOLS SPEED DRIFTING

AIR BAR FEEDS—for converting hand-feed drifters, and sinkers, to power feed. Simple, efficient.

SINKER LEGS—new "clamp-on" air feed leg permits sinkers to do double duty—drilling down holes and drifting. Standard or reverse feed.

PNEUMATIC COLUMNS—simplify drifter set-ups. Safety features prevent accidental collapse.



- Air Feed Legs
- Backfill Tampers
- Bit Sinkers
- Bench Drifters
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- Drills
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- Electric Hammer
- Impact Wrenches
- Paving Breakers
- Pile Driver
- Rock Drills
- Timber
- Tools
- Jack Pumps
- Wagon Drills

To cost \$2,000,000, the potline will raise the plant's capacity by 3,000,000 pounds of aluminum pig a month, making total plant capacity about 260,000,000 pounds annually. Machinery will be obtained from the Government's idle plant at Riverbank, California. Two 847-by-50-foot buildings will be built to house the potline. The company also will increase finishing capacity at the Trentwood rolling mill at Spokane by 72,000,000 pounds a year.

MANITOBA—Northern Chemicals, Ltd., is said to be planning the erection of a 100-ton concentrating plant and a power plant at its Cat Lake lithium mine, 90 miles north-east of Winnipeg. One difficulty to the plan was transportation, which evidently now is solved by the building of a new provincial road passing within two miles of the property. The company is said to have made an agreement with the Lithium Corporation of America for the sale of 15,000 units of concentrated ore annually.

NORTHWEST TERRITORIES—Giant Yellowknife Gold Mines at Yellowknife announces a June production record of 12,588 tons of ore with a recovery of 10,007 ounces of gold and 3,264 ounces of silver. Average milling rate during the month was 420 tons daily.

ALASKA—Havenstret Mining Company is completing construction of a four-foot dredge to operate this year on Mud Creek near Candle. The company also has dragline operations on Bull Hill and Upper Candle Creek. At Bull Hill the company is building a new, long airplane runway on the dredge tailings of Candle Creek to replace the runway which is being cut across by present operations. About 150 men are needed for all the company's activities. Bill Elwing is superintendent of the Mud Creek dredging operation; Harry Palmer is company engineer and superintendent of the Bull Hill operation; Jack Allen is manager.

ONTARIO—Development during the first six months of 1950 at Preston East Dome Mines Ltd.'s property in the Cincinnati district has opened a total of 1,600 feet of new ore. An increased rate of exploration is expected in September when a new hoist and skip goes into operation. Most of the ore was developed in the upper levels and work is now in progress on the sixth through ninth, the 12th and the 18th levels. At greater depth, specifically the 25th level, another orebody recently was opened up. The company has been treating an average of 675 tons of gold ore daily.

QUEBEC—In June Golden Manitou Mines, Ltd., at Bourlamaque produced 143,854 ounces of silver—es-



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Possibly your separating problem is not as delicately balanced as that of the gentleman shown here. However, the Hardinge Counter-Current Heavy media Separator has proven itself as one of the most successful separating devices on The Iron Range.

It is a slowly revolving, inclined cylindrical drum which sends the "float" out one end, the "sink" out the other. No internal moving parts—extremely low maintenance. Handles ore up to 4 inches in size. Write for Bulletin 39-B-3



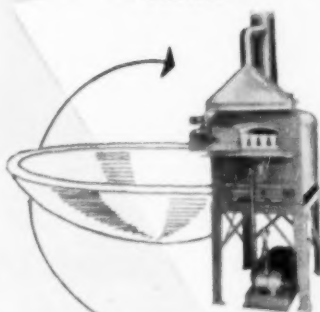
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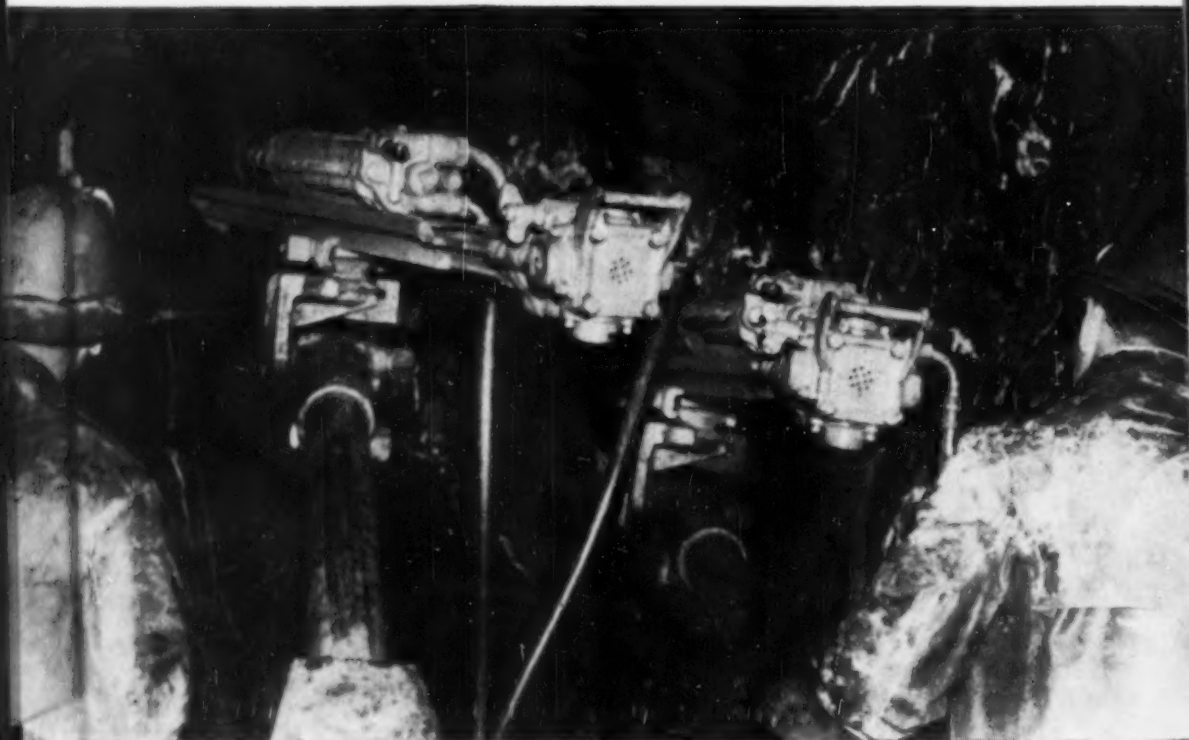
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establishing a record—1,433,419 pounds of zinc, 189,336 pounds of lead, 13,917 pounds of copper, and 707.51 ounces of gold. The company is developing three new levels, one at 1,570 feet, one at 1,720 and the last at 1,870 feet, and is mining from several recently opened orebodies on the upper levels.

ALASKA—Total value of minerals produced in Alaska in 1949 was \$15,299,000. Gold ranked first in value with 229,416 fine ounces produced with a value of \$8,029,560.

NEVADA—The Richmond-Eureka mine at Eureka is being reopened by the Canadian firm, Eureka Corporation, Ltd., of Toronto, and 30 men have been hired to put the mine in proper condition before starting full-scale operations. The upper sections of the Fad shaft will be repaired first. The Ruby Hill was closed in December, 1948, because of excessive amounts of water. Eureka Corp. leases the property from the Richmond-Eureka group and has agreed, among other things, to do exploratory drilling. At the time of the shutdown mining men estimated that \$8,000,000 might be needed to dewater the property.

QUEBEC—Increased exploration, development, and mill rates are reported by Lamaque Gold Mines, Ltd., at Bourlamaque. The No. 5 shaft re-

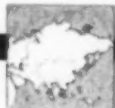
cently was sunk from the old 450-foot horizon to a depth of 1,200 feet and seven new levels established. Most of the mill feed is coming from above the 2,400 level in the No. 7 shaft area, but some development is under way on the 2,500, 2,600, and 2,700 levels. About 500 feet from the No. 7 shaft preparations have begun to sink a four-compartment winze to be collared on the 2,400-foot level and sunk to the 3,000 at least and possibly the 3,600 horizon. Mill rate has averaged 1,475 tons per day during the past few months and eventually is expected to reach 1,500 tons. Exploration also is under way in the northernmost section of the property on extensions of Sigma Mines' vein system. Sigma is doing the work through an agreement with Lamaque and recently discovered another orebody.

NORTHWEST TERRITORIES—Excavations to bedrock have been completed at Akaitcho Yellowknife Gold Mines' property at Yellowknife. A three-compartment shaft is being sunk 1,000 feet with stations to be cut for seven levels. A 5,000-foot diamond drilling program is being considered.

OHIO—Jones & Laughlin Steel Corporation is constructing a 572-foot ore bridge at its docks on the

Cuyahoga River, Cleveland. The bridge is part of the \$3,000,000 improvement program the company is completing at the docks and will have cantilever extensions at either end, giving it an operational length of 572 feet. The unloading bucket which picks up ore from freighter holds will have a 17-ton capacity. The entire unloader should be ready to operate by the 1951 shipping season.

MICHIGAN—The first two uranium exploration leases to be granted in Michigan have gone to the Jones & Laughlin Ore Company of Pittsburgh, Pennsylvania, and to Thad D. Isham and James E. Leitch of Owosso, Michigan. Jones & Laughlin has 80 acres in Baraga County, and Isham and Leitch have 160 acres in Dickinson County. As the uranium-bearing ore is on state land, a 10 percent royalty will be paid into the State Treasury from any profits made by the firm and individuals.



MANCHURIA—The Fushun Colliery is producing over 10,000 tons of coal per day from its four mines, lo-




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Two shovels of 3½ yd. capacity load the well-blasted stone into Euclids for a haul of

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On all Allis-Chalmers tractors, you can operate six months on a 40-hour week basis with just one lubrication of truck wheels, front idlers and support rollers — units that are normally subjected to the greatest wear and are most difficult to service properly. Think what this elimination of daily or even weekly attention means in labor and lubricant savings... and in working time gained! Think of the safety factor, too — no costly damage by greasing neglect.

Look At These Bonuses

Daily greasing periods are eliminated... there's less down time, more productive operating time.

Safety factor automatically protects tractor operation... adequate lubrication is assured for long operating periods... no costly damage by greasing neglect.

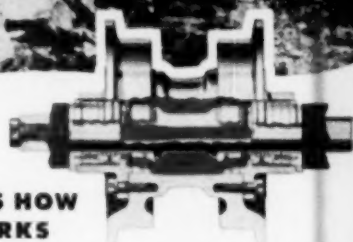
Repair parts expense held to minimum. Operator can safely select convenient time and spot to replenish lubricant.

Full protection is assured... grease kept in, dirt kept out. Daily cleaning of grime and dirt from truck frame to get at grease fittings is eliminated.

Lubricant cost reduced. Units are grease packed at the factory. Thereafter lubricant need be replaced only once every 1000 hours.

Reduced friction delivers more power. Equipped with tapered roller bearings, wheels rotate smoothly inside and out. Bearings are located directly under the load — reduce side thrust and wobble — last longer... easily serviced.

ADDED UP, THESE BONUSES MEAN SAVINGS IN MATERIAL AND LABOR COSTS PLUS GREATER TRACTOR PRODUCTION. THOUSAND-HOUR LUBRICATION ADDS MORE THAN TWELVE FULL DAYS TO THE TRACTOR'S OUTPUT EVERY SIX MONTHS.



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Designed and constructed with tapered roller bearings and Positive Seals, the truck wheels, front idlers and rollers are not affected by dust, loose sand, soft ground, mud or water.

The seal consists of two steel rings, hard and smooth as glass, held together tightly by steel coil springs. One seal ring is stationary, one turns with the wheel. The sealing surfaces are ground to within several millionths of an inch of perfect flatness and are lubricated as are the tapered roller bearings, from a large grease reservoir sealed inside the wheel.

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Pumped easily into the shaft channels, lubricant washes smoothly through the rear and front roller bearings, then back to the shaft, flushing out past the grease gun nozzle. Old grease is replaced by clean, fresh lubricant. Low-pressure, flush-type lubricating action eliminates seal popping... keeps seal face smooth and clean of grit and dirt... reduces wear... increases seal life.

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NEW METHODS—NEW EQUIPMENT

FREE MANUFACTURERS' LITERATURE

THOR UNIVERSAL ELECTRIC TOOLS: The Independent Pneumatic Tool Company has released three new circulars covering its electric mining and contractor's tools. Circular JE-1148 gives complete data on the new Thor "Copper Line" tools and drill stands. Circular JE-1159 describes the new Thor Model 55 Sinker Rock Drill giving complete specifications with cut-away drawings. Circular JE-1152 describes and illustrates a new sinker leg, air bar feed, pneumatic column and stopper leg. Each circular is free upon request.

DORRICO PUMP: The Type W is the newest addition to the Dorric Company's line of diaphragm pumps, capable of handling up to 75 cu. ft. of pulp per minute. Bulletin No. 5002 contains a brief description of this unit giving construction, sizes, capacities and operating advantages on heavy duty pumping problems. Write MINING WORLD for your copy.

CENTRIFUGAL PUMP: Manufactured by Canadian Allis-Chalmers, Ltd., the new type rubber-lined unit for handling liquids with solids of 325 mesh to 1/2-inch diameter are available in open and closed non-choke impeller types of four sizes each. This new pump is fully described in "SRL Rubber Lined Pumps," Bulletin Number ORB7311.

HEAVY MEDIA SEPARATORS, CLASSIFIERS: A completely new, 20-page catalog on wet classification and heavy-media separation devices has been issued by the Hardinge Company Bulletin 59-B.

SERVICE MANUAL FOR CRAWLER TRACTOR: A new 287-page manual, featuring Allis-Chalmers' HD-19 torque converter equipped crawler has been released by the company's Tractor Division. Copies of this manual can be obtained for \$5.00 each.

CRAWLER MOUNTED LOADER: Versatile application underground or on the surface of the new Model 104 Einco crawler RockerShovel is described in new literature following Einco's exhaustive field tests. The new unit is manufactured with either Diesel or electric power. For heavy duty rock loading time 104 is equipped with a 3 1/2 yard bucket.

CRADLE MOUNTED CENTRIFUGAL PUMPS: Ingersoll Rand announces publication of a new four-page release No. 269 describing its new line of cradle-mounted centrifugal pumps.

PORTABLE MINE BLOWERS: A new bulletin describing its line of Axivane portable mine blowers for mines and tunnels has just been published by the Joy Manufacturing Company.

NEW CATERPILLAR MACHINERY: Illustrations and complete specifications on Caterpillar Diesel tractors, motor graders, engines, along with bulldozers, scrapers and hydraulic controls will be found in a new 16-page pamphlet, Form 12597, published by Caterpillar Tractor Company. **TIMBER PRESERVING METHODS:** New brochure issued by Osmose Wood Preserving Company of Buffalo, N. Y. covers

methods and cost-cutting factors in preserving mine timbers.

SPEED CONTROLLER: Allis-Chalmers announces the addition of a new line of speed controllers.

GASOLINE AND DIESEL ENGINES: A new two-color booklet, E-102-NN describes the use of International Harvester gasoline and Diesel engines in the pit and quarry industries for powering rock crushers, generators, and pumps. Copies can be obtained by writing MINING WORLD.

SCREEN: Hendrick Manufacturing Company, Wedge Slot Screen Division, Carbondale, Pa., announces that the Wedge Slot Screen is now available in special designs for hardrock-ore screening. Get Bulletin, Hendrick Wedge-Slot Screen, from MINING WORLD.

PLACER JIG: A complete description, including photos, drawings, dimensions, weights, and operating data is available for the mechanically actuated, fixed-screen Dorrico Pan-American Placer Jig. Dorrico Bulletin 2401, available from MINING WORLD.

ROOT RIPPER: Baker Manufacturing Co. announces a new root ripper, to be attached to bulldozers and graders, or to be purchased as a complete machine for land clearing. The tool is described in Bulletin 887.

CONCENTRATOR: The Weing Concentrator, effecting a gravity separation in size ranges from 1/4-inch to 35 mesh (between flotation and sink float ranges), is described in Colorado Iron Works Bulletin No. 50, available upon request from MINING WORLD.

CRAWLER TRACTOR: A 24-page catalog containing pictures, sectional views, and diagrams fully illustrating the new International TD-18A crawler tractor has been released by International Harvester Company. Write Mining World for copy of the TD-18A catalog, form number A-154-NN.

SAFETY HAT: An illustrated circular, "Roughneck Safety Hat," describes in full the double impact-absorbing features of the 12-ounce aircraft grade aluminum alloy Hard Bodied safety hat manufactured by E. D. Bullard Company. For copy of this bulletin write Mining World, 121 Second St., San Francisco, Calif.

NICKEL ALLOYS: Two new technical bulletins on the properties of high nickel alloys have been issued by the International Nickel Company, Inc. Both are 24 pages and contain charts, tables on compositions and properties, working instructions, and other information of a technical nature. Bulletin T-1, entitled "Engineering Properties of Inconel," contains information on Inconel and Inconel "X." Bulletin T-8 deals with the engineering properties of "K" Monel and "KR" Monel.

INDUSTRIES RESEARCH: Allis-Chalmers basic industries' commercial research and

testing facilities are described in a new 32-page bulletin released by the company. Commercial testing services of the laboratory are confidential and available to anyone in industry on a non-profit basis. The bulletin, "Allis-Chalmers Basic Industries Research & Testing Facilities," can be obtained by writing for bulletin 07B6419A.

DIESEL-ENGINE FUEL PUMP: Cummins Engine Company's new fuel pump is 65% lighter and 56% smaller than the present pump.

BITS: How to successfully recondition tungsten-carbide bits is shown in a 20-page book released by Rock Bit Sales & Service Company. Many helpful operating suggestions are given for obtaining the maximum speed and footage out of carbide bits. This information is available on request.

MINERAL TESTING LABORATORY: The Western Machinery Company announces the opening of a Mineral Testing Laboratory to provide a world-wide mineral testing service on a cost basis. Additional information on the new laboratory can be obtained by writing Mining World.

MAGNETIC TUBE TESTER: The Dings-Davis Magnetic Tube Tester, manufactured by the Dings Magnetic Separator Company, is now available with an Alnico Self-Energized magnet, requiring no electrical current. For further information write Mining World.

REAGENTS: An eight-page bulletin containing interesting resumes of the application of American Cyanamid reagents to a variety of copper ores in Canada, Mexico, South America, Africa, Australia and the United States has been issued by American Cyanamid Company. For copies of "Current Reagent Practice on Copper Ores" write to MINING WORLD.

New Traylor Crushing Roll Bulletin

A new 40-page bulletin on Traylor Crushing Rolls has just been published by Traylor Engineering and Manufacturing Co. of Allentown, Pennsylvania. Exploded views of each of the three different types of Traylor rolls clearly illustrate the exclusive features that account for unusual operating economy. For example, Traylor's automatic lateral adjustment mechanism, used to minimize annular corrugation and flanging of roll tires on type A and AA rolls, is fully described and illustrated. Of special interest to anyone considering the purchase of rolls is a chapter that shows how to determine the proper size roll required to do a given job with the greatest economy and efficiency. Traylor Roll Bulletin No. 5637 is available on request to Traylor Engineering and Manufacturing Co., Allentown, Pa., or MINING WORLD, 121 Second Street, San Francisco, Calif.

Copies of all bulletins may be obtained by writing MINING WORLD, 121 Second St., San Francisco 5, Calif. Please refer to bulletin number and issue in which it appeared.

Capitol Concentrates

(Continued from Page 6)

report fell upon deaf ears. If it had not, we would be way ahead now.

After waiting until materials are hard to get, the President in July, 1950, is "considering" doubling its stockpiles "as insurance against a new world war." Again Congress was immensely more farsighted than the Administration.

● Stockpiles Are Inadequate

The minimum aim for the stockpile is \$4 billion worth of materials. The total should be \$8 billion, yet actually we have on hand only \$1.5 billion worth of supplies. The Munitions Board says it will take until 1956, at least, to obtain \$4 billion worth. What price our smart planners!

● White Bill Action Unlikely

Representative Compton White has introduced the latest in a chain of bills, begun by Senator James E. Murray of Montana in 1943, to compensate gold miners closed down by WPB order L-208. The Administration has always been against such a move and will continue to oppose any similar bills.

There was a time when Congress might have passed the Murray bill, but, although hearings were held by a subcommittee of which Senator Johnson of Colorado was chairman, the bill was pigeonholed without a re-

port—for no reason which was ever made public. It is most unlikely that the White bill, H. R. 7851, stands any chance whatever, partly because of the elapsed time since the damage and partly because it went to the Judiciary Committee of the House, which is holding H. R. 834, the Contract Settlement Act amendment, a bill of much wider scope.

● No Comment Is Needed

A recent ECA press release states: "A new search for copper, manganese, lead and zinc is being conducted in the desert and mountains of Algeria with the aid of Marshall Plan dollars. The Economic Cooperation Administration said discovery of the metals would give Algeria a quick opportunity to earn badly needed foreign currencies."

● Stockpile Amendment Must Be Deleted

While the advocates of stockpiling from domestic sources were napping on the floor of the House, Representative Thomas slipped an amendment into the appropriations bill that nullifies all the attempts of the Armed Services Committee and others to give domestic miners a break through stockpile purchases. The Thomas amendment limits domestic purchases to not more than \$25,000,000. This is a stupid and fatal move, opposed even by the Munitions Board, which nor-

mally spends more than this sum for domestic materials. It has been advocated many times in the past that the appropriations for stockpiling carry a rider that not less than 25 percent of the funds be expended in the United States—many times the Thomas limitation and still too little. The Senate must delete the Thomas amendment.

It would be a miracle indeed if Senator McCarran could get action on these bills combined into one package in S. 3661, even though many ideas of merit are involved.

● Free Trade Opposed

While our Administration is paving the way for reduction of tariffs on some 2,500 items in order to lead the world into economic security and prosperity—it thinks—the British Labor Party has issued a statement which indicates a diametrically opposed view. It said, "The sudden dismantling of barriers to trade would in the short term cause serious dislocation, unemployment and loss of production. Whole branches of industry and whole districts in many parts of Europe would go bankrupt and destitute." Which, of course, is what the advocates of lower tariffs say will happen if we do not approach free trade as nearly as possible. It is safe to say that concessions made at the trade treaties conference will, in the net, be to the advantage of everyone but us.



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Mining Men

(Continued from Page 19)

Chancellor of the University of Montana, on behalf of the trustees of the Colorado School.

Gerald M. Richmond, geologist with the U. S. Geological Survey is studying glacial deposits in the La Sal Mountains, Colorado, with C. B. Hunt, chief of the Denver office.

W. C. Page, former general manager of western operations for the United States Smelting, Refining and Mining Company, Salt Lake City, Utah, has been elected vice-president and general manager of western operations by the board of directors. Toni Lindstrom is working ground

on Wilbur Creek, Lavengood district, Alaska, during the summer. He has been a mining operator in the territory for some time.

Sam Goss, who started at Butler Bros. in Minnesota in 1940, has been made a pit foreman at M. A. Hanna Company's Morton mine, where the company is engaged in a stripping program. Other Hanna company personnel changes are: Bob Van Evers, of the engineering department at Cooley, becomes a pit foreman; Solomon Friend has been made pit foreman at the Weggum mine, Hibbing; Warren Severson, formerly at the Wabigon mine, is a pit foreman at the Morton; William Waite, who was in the mechanical department at

O. L. PRINGLE has been made special assistant to Alden G. Rosch, president of Columbia Steel Company, San Francisco, California, subsidiary of United States Steel Corporation. Pringle also remains a vice-president and director. Marcus J. Aurelius, former vice-president of U. S. Steel Supply Company, another subsidiary, has succeeded Pringle as vice-president in charge of sales for Columbia. Max D. Howell has been made a vice-president and treasurer of U. S. Steel in New Jersey.



Cooley, has been made assistant shop foreman of the Harrison shops at Cooley. John A. Gernert, Duluth mining engineer, has joined Hanna's Hibbing engineering office.

John Stitzer, mining engineer, has been made engineer and secretary of the Maturi Corporation of Chisholm, Minnesota. The company does considerable stripping work on the Mesabi range.

L. A. Decota is in charge of preliminary testing and Leslie Allen is working as drillman for the Gold Hill Dredging Company of San Francisco in its operations at Gibbonsville, Idaho.

R. D. Griffey, formerly with the Vanadium Corporation of America, Durango, Colorado, has accepted a position as mill foreman for Acme Barite of Mineral Point, Missouri. Previous to these jobs he spent two years in Honduras as mill superintendent of the El Mochito mine, New York and Honduras Rosario Mining Company.

Obituaries

J. S. (Sam) Coupal, 66, consulting mining engineer, state president of the Arizona Small Mine Operators Association and former director of the Arizona Department of Mineral Resources, died June 4 at Phoenix, Arizona. He also was a director of the Arizona chapter of the AIME and a member of the American Mining Congress among other positions.

Frank Richard Plughoff, 54, former manager of the Triumph mine, once associated with the Camas Trust and Baltimore mines, sometime independent operator, and president of the Blaine County chapter of the Small Mine Owners, died June 29 at Hailey, Idaho.

Peter Misovich, 64, well-known mining man of Fairbanks and Flat, Alaska, died in late May at Seattle, Washington.

Edwin L. Skogren, 68, mining captain at the Eureka mine of the Castile Mining Company, Ramsay, Michigan, died June 18.

William C. Hanson, 65, former president of the National Iron Company, died June 6 at Duluth, Minnesota.



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MONTANA MINERS MEET IN BUTTE FOR SPEECHES AND TOUR OF THE "GREATER BUTTE PROJECT"

By plane, by automobile, and by virtue of already living in the "New York City of mining camps," mining men assembled at the Finlen Hotel in Butte, Montana, on July 30 for the eleventh summer convention of the Mining Association of Montana. President O. P. Chisholm of the Montana Association of Mines took the floor and the sessions got under way.

The convention's first address, by Tom Lyon of International Smelting and Refining Company, was a fighting speech entitled "Silver." The silver mining industry, and those mines which produce silver as a by-product, are faced by a group of tough foes, "the silver fabricators, bankers and economists [some of whom] have never seen a mine and have not the remotest idea of the problems which confront the industry." Refuting an argument of the silver fabricators, he pointed out that in days of low-priced silver the fabricators made small profits or even incurred losses; today, however, the silver fabricators, under high silver prices, are doing much better.

Julian W. Feiss, assistant director of the U. S. Bureau of Mines, described, in the second speech of the day, the "Bureau's Mt Weather [Virginia] Testing Station." Rock and equipment tests of a kind that no private mining company is able to make are being conducted at the newly acquired (1947) testing station.

On Monday morning, the 31st, the second and last day of the MAM convention, conventioners made a surface tour of Butte, visited Anaconda's Greater Butte project and got an up-to-date picture of progress on the big block caving plant. Progress on the sinking of the Kelley shaft, then down to about 600 feet, the system of cylindrical ore bins for storage of crushed copper ore, the hoist house now being constructed, and the system of hoisting from the shaft by a sinking hoist that is placed, contrary to usual practice, at right angles to the long dimension of the shaft were the highlight features of the surface tour.

At noon on Monday, an informal luncheon honored Doctor Francis A. Thomson, president of the Montana School of Mines.

In his leadoff speech Monday afternoon, F. A. Linforth, assistant to the vice-president of Anaconda Copper

Mining Company at Butte, reviewed the current plight of manganese, and in his accounting of the nation's manganese resources pointed to a hope for a continued ample supply of that vital war material. Today, the Phillipsburg area produces virtually all the chemical grade of manganese. The story of metallurgical grade manganese is somewhat different. Ninety percent of our 1,500,000 tons of metallurgical manganese is usually imported. Of the 10 percent that is produced domestically the Butte area furnishes 97 percent from the pink manganese ores on the southerly side of town. Mr. Linforth, pointing out the necessity for manganese in our great steel making industry, called for an end to "fussing" and for the start of a real campaign to insure sufficient manganese for this country's needs.



Among those attending the Butte convention of the Mining Association of Montana were (top) R. C. Sherman, E. J. duPont de Nemours & Company, who headed the entertainment committee; (bottom) Doctor Francis A. Thomson, president of the Montana School of Mines, and C. A. Lemmon, assistant manager of Anaconda's Washoe Reduction Works.

Dean John P. Spielman of Washington State College concluded the afternoon sessions with a speech entitled "Dollars and Sense." He called for an end to foolhardy government policies which have squandered millions on "our most basic industry," but have yielded only small results. As an example, he cited the great chrome development in Stillwater County, Montana, during World War II. At an expense of millions of dollars, much critical and badly needed

material, and a portion of our critical manpower supply, the chrome project was rushed into development during the war. Then with the close of World War II, the plant was dismantled, sold at a cost that netted the government a few pennies on each dollar of investment, and the project was abandoned.

Ross D. Leisk, general manager of Sunshine Mining Company of Kellogg, Idaho, read the MAM resolution on government silver policies. The unanimously adopted resolution called for continued use of all newly mined silver as backing for our currency, and a reduction of today's seigniorage charges by the mint from 38½ cents per ounce to a figure that would be the actual cost to the mint.

In the main address R. H. Glover, western general counsel of Anaconda Copper Mining Company, spoke on "Relations of Large Mining Companies with Small Mining Companies." He pointed out the interdependence of large and small companies: "At our Tooele plant in Utah during 1948 we received ore and concentrates from 155 different shippers... an average of 973 tons per shipper." He explained that he opposes copper tariffs because this country produces only about two-thirds, or 1,000,000 tons, of its necessary copper supply; that today our economy is dependent upon that imported one-third of the copper supply.

Consolidated Installing Smelter at Hailey

Preliminary work is well under way for the establishment of Consolidated Smelting and Refining Company's new smelter on a 160-acre site in the Wood River Valley, seven miles north of Hailey, Idaho. Superintendent in charge of operations is D. Atwood Knight of Denver, Colorado.

According to G. P. Williams of Boise, Consolidated's president, a plant has been bought at Phoenix and is being dismantled and shipped to Hailey. About \$100,000 worth of equipment is arriving at the property and includes an Allis-Chalmers blast furnace with a 600-800 ton daily capacity. The smelter will be equipped to treat various ores from the area.

The company hopes to have the plant operating in early 1951, barring unforeseen shortages of materials, and will treat custom ores from the numerous small mines in the area as well as ores from its own mines. During the summer of 1951, Mr. Atwood said that an expansion of smelt-

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MINES AND SMELTER AT
SUPERIOR, ARIZONA

ing capacity was indicated and that consideration was being given to the production of refined and semi-refined metals.

Coeur d'Alene Mines Cuts Vein on 2,800 Level

A large silver-copper vein has been encountered by Coeur d'Alene Mines Corporation on its 2,800-foot level southwest crosscut, according to H. C. Mowery, president of the Osburn, Idaho, property. Width of the vein is about 13 feet and values are good. Development ore already has been taken from the vein and is being stockpiled at the mill, which will be reopened after a long period of idleness as soon as sufficient ore is on hand.

Since the ore was found in American Silver Mining Company's extralateral rights area which Coeur d'Alene Mines is developing under contract, and since interlocking agreements exist between these two companies and Silver Standard Mining Company, Callahan Consolidated Mines Company, and Coeur d'Alene Consolidated Mining Company, there will have to be a complicated division of profits. The companies are negotiating an agreement now, but are not letting it interfere with development which is proceeding with all rapidity.

IDAHO

According to reports, Sunshine Mining Company, Kellogg, Idaho, will stockpile any pitch-blende ore that may be produced from development work on the 3,700 level. The drifting done so far has not yet given a definite picture of the structure, which is very irregular and spotty. Meanwhile regular silver production continues. In the first six months of this year, 136,528 tons of ore were produced. In June alone, 24,543 tons of ore were produced. Drifting is being pushed on the 3,400 level of the Chester vein through the Omega area toward the west boundary of the Rothbart area, and on the 3,250 level toward the east boundary of the Rothbart area. One of two raises from this level to the 3,100 level has been completed and the other is fairly far along.

Charles Heisen of Flint, Michigan, and Dave Bell of Mackay, Idaho, who are leasing the Livingston mine near Mackay, will install a \$45,000 mill to treat gold and silver ore from the mine, according to reports.

As soon as prospecting is completed on the 300-foot level primary vein structure, Washington-Idaho Mining Company will deepen its shaft 500 feet, according to Bruce Allgaier,

resident manager. Diamond drilling also is on the agenda. Active development of the mine was resumed in 1947 and development ore is being stockpiled from a drift on the 200-foot level. According to Allgaier, vein structures are increasing in value as further depth is attained and probably regular production will not be feasible until lower levels are established. The mine is northeast of Kellogg, Idaho. Values are in silver-lead-zinc.

Food Machinery and Chemical Corporation's Westvaco Chemical Division has contracted with the Idaho Power Company for enough power to run a third phosphate furnace which will be installed at Westvaco's Pocatello plant. The furnace should be operating around the first of May, 1951.

Vindicator Silver-Lead Mining Company is contemplating sinking a 600-foot shaft at its property east of Mullan, Idaho. According to President H. J. Rossi, Vindicator ground is much like that of the Lucky Friday mine where ore is found at 600 feet.

Idaho Power Company's new 69,000 volt transmission line from Bannack, Montana, to Salmon, Idaho, is completed and an extension of the line to Calera Mining Company's Blackbird mine will be in service this month to power that company's new cobalt recovery plant.

Another orebody has been encountered on the 1,450-foot level by Highland-Surprise Consolidated Mining Company, Wallace, Idaho. The orebody, carrying lead and silver values, is being developed by drifting both east and west, and the company will add more miners as soon as ground is prepared for stoping.

Hypotheek Mining and Milling Company has bought the King of Pine Creek properties lying adjacent to its own near Wallace, Idaho. As Hypotheek's main lead vein is said to project into King ground, the former has wanted to buy the King for some time and at a special stockholders' meeting recently sale was ratified.

The Silver Pirate Mining Company has begun driving a 2,200-foot tunnel to prospect several outcropping veins on its property near Kellogg, Idaho, on the south fork of Big Creek. On

the adjoining Silver Bowl holdings being developed by Silver Giant, Inc., a long crosscut from the east fork of the creek and 350 feet higher has encountered promising showings, adding incentive and information to the Silver Pirate project.

MONTANA

The Elkhorn Mining Company has begun shipments of uranium ore to an AEC licensed buyer. The ore is from the company's Free Enterprise mine at Boulder, Jefferson County, Montana. Development of the main orebody at present includes three raises, and stopes are being established. This orebody is about three and a half feet wide. Drifting is under way toward other known oreshoots.

By diamond drilling Signal Mining Company has located the contact between the granodiorite and limestone formations in a virgin area of its gold property at Bannack, Montana. Drifting is proceeding on a two-shift basis on the two lowest levels of the mine, the Dunn and the Priscilla, to develop the oreshoots. About 1,000 feet of development will be done altogether, according to Frank Eichelberger, mining engineer and Signal's manager. In another virgin area of the property bulldozing of surface outcrops will begin soon and it is thought that ore mined here will be of direct shipping grade.

The Superior Fluorspar Corporation has bought 28 unpatented mining claims from Coeur d'Alene Extension Mines, Inc., near Superior, Montana, according to Dr. F. E. Scott of Wallace, Idaho, president of Coeur d'Alene. Superior had been negotiating for the fluorspar claims for several months, and Frank Clark, president, advised that exploration and development would start immediately. If enough ore can be developed a concentrating mill will be installed.

Increased activity is reported by the Alps Mining and Milling Company in the Harvey Creek mining district, south of Clinton, Granite County, Montana. A third shift has been added. In the Alps tunnel two newly-discovered veins are being developed and a large orebody reportedly has been opened up on which 150 feet of drifting has been done so far. A lower crosscut tunnel is to be driven 200 feet below the Alps orebody. Drifting in the Blue Grouse tunnel is developing a sizable vein of sulfide ore. The nearby Hidden Treasure group of claims is under production. Mill output has been increased to six tons per hour by the addition of a 24-inch cone crusher and larger flotation cells, top capacity

CORRECTION

In MINING WORLD's article on the operations of the Moonlight Mining Company, June issue, an incorrect designation was given the concentrating tables used in the sand and slime circuits. The units employed should properly have been referred to as No. 6 SuperDuty Diagonal-Deck Concentrating Tables, built by the Deister Concentrator Co. These late-type units were installed in 1942 when the Moonlight company rebuilt the plant following a fire which destroyed much of the previous mill equipment.

now being 150 tons daily. H. Herman Miller is president and general manager.



R. G. Amidon, superintendent of the Buffalo Gold Mine near Granite, Grant County, Oregon, advises that an expanded development program is planned for the mine. The program includes driving a long adit to explore veins at a depth of 650 feet. Buffalo has been a regular shipper since the last war. The property is equipped with a flotation mill.

According to reports, the Sumpter Valley dredge has been sold by the Baker Dredging Company of Baker, Oregon, to the Powder River Dredging Company. Carl Diebolt of Portland is president of the latter, and L. A. Skellings is resident manager. They plan to dredge placer ground in the lower end of Sumpter Valley.



The Prospectors Course given by the School of Mineral Engineering,

University of Washington, Seattle, will be offered again beginning September 28, 1950, and will be repeated beginning January 3, 1951. The fee is \$10 for nine weeks full-time instruction.

About 100 to 150 tons of ore is being produced at the Golden King mine by the Lovitt Mining Company, Inc., Wenatchee, Washington. E. H. Lovitt, mining engineer in charge of the mine, said that the mine is supplying the American Smelting and Refining Company's Tacoma smelter with half of the 5,000 to 10,000 tons of silica required each month as a flux. The gold content of the ore is sufficient for paying mining and freight costs, he said.

According to Frank Lilly, president, the Gold Bond Mining Company and other mining companies in the Blewett, Washington, area are back to their pre-war production rates. Gold Bond is mining ore from its Olympia mine through the Stoner tunnel and Pole Pick mine. The company intends to resume work in the Olympia tunnel. Nearby at the Sonny Boy mine, headed by Walter Ludwig, diamond drilling is under way from a new adit driven about a year ago. Development is reported at the old Culver mine by the Washington Meteor company, at the Searla group, at the Ben Kirchner group, and at the Gold Gulch Mining Company's mine.

About 100 other small operations are estimated to be active in the area.

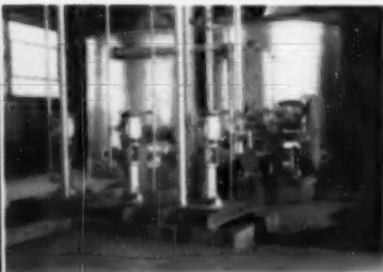
Recent bulldozing operations and removal of overburden at the Big Iron mine, Orient, Washington, has uncovered a quartz vein running about 500 feet in a southerly direction from the mine's iron ore pit and averaging about five feet wide. Values are in copper, silver, and gold, and although the occurrence of these metals has been known for many years no one has ever bothered to exploit them and the vein mentioned above is the first found on the property. Big Iron mine is said to have the largest deposit of magnetite in the northwest and, to date, has shipped about 40,000 tons of magnetite ore to the Northwest Magnesian Company at Chewelah, Washington. Estimates of reserves run between 500,000 and 1,000,000 tons of iron ore, and these figures are subject to revision, according to Judge W. Lon Johnson, one of the owners, because of additional ore finds through the recent bulldozing program. Other men connected with the development of the mine are L. E. Joseph, the other owner; Ed Johnson, contractor, who will do this season's development work; and John P. Thomson, Colville mining engineer, in charge of geologic work.

The Columbia Tungsten Corporation is diamond drilling on its property near Cedonia, Stevens County, Washington. Decision to resume work at the property resulted from the recent rise in the price for tungsten.

Mining machinery and equipment, including a compressor, is arriving at the property of Columbia Lead and Zinc Mining Company, Metaline Falls, Washington, according to Everett Houghland, general superintendent. Columbia recently began a large exploration project on its 18 claims in the district.

The newly-formed Eltara Mining Corporation is reopening the old Green Monarch copper-silver-gold mine on the shore of Pend Oreille Lake, Washington. Eltara has constructed a cook-bunkhouse on the property, has surveyed the old workings, unused since 1917, and plans to start driving a 50-foot crosscut immediately. The crosscut will be driven on the second level to cut the downward extension of an oreshoot mined on the level above. Officers of the company are Cedric D. Phelps, president, and Vernon R. Griffith, vice-president, both of Richland. L. C. Culbourn of Spokane is a vice-president and mine superintendent, and the mine was obtained from him. Roger O. Oscarson of Spokane is geologist.

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Climax Uranium Gets New Claims; Stockpiles Ore

In the past few weeks Climax Uranium Company, the new firm established by Climax Molybdenum Company and Minerals Engineering Company, Grand Junction, Colorado, has increased its holdings and activities in Utah and Colorado. Reported is the transfer of 141 uranium-vanadium claims from Minerals Engineering to Climax Uranium. The claims, in Utah, comprise the Mineral Polar Nos. 1 through 59 in the Polar Mesa district of Grand County, and the Mineral Treasure Nos. 1 through 69 and the Cactus Rat Nos. 1 through 13 in the Yellow Cat district, Grand County.

The company is producing ore now from its Outlaw Mesa group in Colorado and is stockpiling it by the new 100-ton mill building being converted from a sugar factory at Grand Junction for a cost of \$1,000,000. A new shortcut on the road from these claims to the mill to cut the distance about 17 miles is planned. Drilling is in progress not only at the Outlaw and Calamity claims, but also at claims in Paradox valley.

Stearns Roger Manufacturing Company of Denver, which has the contract for work on the mill, expects to use as many as 100 men during peak construction. Machinery and equipment are arriving. Plans for offices and a laboratory have been made.

Officials of Climax Uranium are Arthur Bunker, president and director, who also is president of Climax Molybdenum; E. J. Duggan, vice president and director; Blair Burwell, general manager and director, and also president of Minerals Engineering; William J. Coulter, director; and W. G. Thomas, secretary-treasurer.

Fluorspar Mining Halted At Wagon Wheel Gap Mine

Colorado Fuel and Iron Corporation has closed the Wagon Wheel Gap fluorspar mine near Creede, Colorado, according to G. H. Rupp, manager of the corporation's mining department. The reason for the shutdown was said to be to conserve the company's fluorspar deposits; future supplies will be purchased from outside sources.

The mine has been producing for 25 years and recently received a safety citation from the Bureau of Mines for a record 1,563,300 man-

hours with only one fatality in the period from July, 1924 to February, 1950. Before the shutdown 25 men were employed at mine and mill.



The Colorado Mining Association will hold its annual convention, the nation's outstanding mining event, at Denver on February 1, 2 and 3, 1951, with active support given the meeting by the affiliated western groups.

Shelby-Johnson Mines, Inc., has made its first shipment of lead ore from its property on Loveland Mountain near Alma, Colorado, to the Arkansas Valley lead smelter of the American Smelting & Refining Company at Leadville. Shelby is the newest producer in the famous camp, having begun exploratory work in September, 1949. At that time a 1,200-foot crosscut was started to the vein below early-day workings developed through the Shelby shaft. Everett Johnson is manager and company treasurer. Charles Jordan of Alma is consulting engineer.

The Cresson and Ajax gold mines will be re-opened in October or November, according to Merrill E.

Shoup, president of the Golden Cycle Corporation, Cripple Creek, Colorado. The mines have been closed for a year while Golden Cycle has been building its new Carlton gold reduction mill in the Cripple Creek district.

C. R. Turner, J. E. Robinette and G. A. Estes have formed a new organization, T. R. E. Joint Venture, to prospect for and mine uranium-vanadium ore. They have started diamond drilling at their 13 claims in western San Miguel County, Colorado. All ore is shipped to the AEC's uranium-vanadium ore purchasing depot at Monticello, Utah.

Mike Doyle, who is working the Patti Rosa mine and 1,200 square feet of surface leased from the United Gold Mines Company, Cripple Creek, Colorado, has done considerable prospecting work on the fifth and sixth levels of the mine and has ore ready for shipment when the new Carlton mill is completed. Doyle also is working split-check leases on the W P H and the Forest Queen mines with Francis Gunn and has a bond and lease on some surface ground at the Cresson.

The Globe Hill Mining Company, a new mining company in the Cripple Creek area, has been formed by Albert S. Konselman, Melvin Brugger and George Grote, all of Colorado.



WYOMING FIRM PROCESSES BENTONITE

The picture shows the Moorcroft, Wyoming, plant of the Black Hills Bentonite Company where 100 tons per day of bentonite is dried, ground, classified, and sacked. A Caterpillar D7 tractor with a Traxacator is loading and transporting stockpiled bentonite to the plant. In the plant the bentonite is dried in a Ruggles-Colex oil-fired, double-shell rotary drier in which an average of 25 percent moisture is removed. The dried bentonite is then ground in a four-roll Raymond high-side roller mill. The pulverized bentonite, 90 percent minus-200-mesh, is air-floated and packed in 100-pound, four-ply paper bags and loaded and shipped in the boxcars shown on the plant siding. Albert C. Harding is general manager of Black Hills Bentonite.

Springs. The company has leased the Proper mine from the Stratton Estate. Surface construction now is under way and equipment has been ordered. Plans have been completed to drive a 1,000-foot crosscut from the Chicago and Cripple Creek tunnel, and to do additional work at the adjoining C. O. D. mine, which is leased from the Joe Dandy Mining Company.

The Eagle mine of the Empire Zinc Company, a New Jersey Zinc Company subsidiary, has resumed full-scale operations at Gilman, Colorado. The mine had been shut down for 13 days because of a switchmen's strike against the Denver & Rio Grande Western Railroad Company. Empire Zinc recently has increased production of silver-copper-gold ore from the property. The ore is shipped directly to the Garfield, Utah, copper smelter of AS&R. Frank J. Maloit is manager of Empire Zinc.

United Minerals Reserve Corporation has been organized by a group of Salt Lake City men to operate mines in three western states. The company is part owner of the Colorado Gold King, Inc., which controls the extensive Gold King mine properties at Gladstone, San Juan County, Colorado. In Idaho the company's interests are the Paymaster mine, Homestake mine and Long Grade mine, all in the Warm Springs Creek mining district. In Arizona, the company will work the Santa Cruz Copper Company mine in the Harshaw mining district. United Minerals' president is George W. Snyder, Jr., of Salt Lake City; H. C. Orton of Chicago, president of Colorado Gold King, is a director.



Recent reports on Utah uranium mining indicate mushrooming activity. In the Yellow Cat district south-east of Thompsons, Grand County, about 30 uranium-vanadium operations are under way with possibly a hundred miners at work, according to E. E. Bowen, mine lessee. In the Maryvale area, the Atomic Energy Commission has announced its intention to start exploratory drilling, with the work probably to be done by the Bureau of Mines. Holes will be angled-drilled to depths of 1,000 feet or more. East Standard Mining Company is doing preliminary work on two recently-acquired claims near the Atherly group. Two men, Don McIntosh and John Henry, reportedly uncovered a 10-foot vein of autunite only two feet beneath the surface on one of their five claims, and several other individuals are developing claims in this district, including Robert Glenn and associates. Mark Holmes, Denton Chamberlin and Lane Bertelson.

A large project will be undertaken by Consolidated Uranium Mines to develop and produce ore from three groups of uranium claims in south-east Utah, according to E. G. Frawley, president. One group of 56 claims is at Temple Mountain, and regular production of 70 tons of ore daily now is being mined by 11 contractors and is sent to Monticello for processing. Approximately 50,000 feet of diamond drilling is planned at these holdings, also. The second group is the Yellow Cat near Thompsons. No

plans have been made yet to mine them. The third group of 68 claims is in the Dry Valley region of San Juan County. This group belongs to Vanadium Corporation of America and will be worked on a royalty basis by Consolidated. The most promising claims, particularly the Friaco, will be equipped almost immediately. VCA has done substantial diamond drilling on the property, reports say. Other officers of Consolidated, besides Frawley, are Roy A. Hardy of Reno, a director, and R. J. Bonnemort, a director and mine superintendent.

A winze will be sunk in Park Utah Consolidated Mines Company's Ontario mine from the drain tunnel level to the 1,800-foot level or deeper to develop another orebody and will be started at once. The deposit of ore is known to extend from the 1,500 level to the deeper levels. For the past year exploration and development only have been done at this Park City mine. Paul Hunt is general manager.

An inclined shaft will be sunk on Plumbic Mines Company's Jeepster No. 3 claim, Marysvale, Utah. According to Paul H. Hunt, president, the incline will be driven to cut a vein of uraninite. A crosscut tunnel then may be driven 350 feet below to intersect the incline. Road-building to the site is finished. Work is on a two-shift basis.

Walter Gramlich is shipping uranium ore from the Vanara mines near Greenriver, Utah, to the Shattuck Chemical Company at Denver. Gramlich owns 27 claims and has equipped his property with several trucks, compressors, jackhammers and a wagon drill.

Metal Producers mill at Milford, Utah, has been converted from mixed gravity and flotation concentration to straight flotation. The capacity is about 400 tons per day. At present copper ore from the O.K. copper mine's waste dumps is being milled. After these dumps are cleaned up the company reportedly intends to try mining the outcrop by open-pit methods. D. C. Peacock is manager.

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Rail Shipments of Iron Ore Ease Lakes' Backlog

Shipments of iron ore by all-rail routes from Oliver Iron Mining Company's Minnesota ore properties to the Youngstown and Pittsburgh district mills of the United States Steel Corporation have begun, R. T. Elstad, president of the mining subsidiary, has reported.

"This all-rail movement of ore will supplement present lake shipments," Mr. Elstad stated, "and will enable us to make up to some extent the deficit in normal ore shipments caused by ice conditions on the upper lakes early in the season which resulted in the later-than-usual opening of navigation on the Great Lakes."

The type of railroad car used is different from the conventional Lake Superior style of ore car, but similar to those used for hauling coal and in use for transporting ore at lower lake ports. The amount of ore involved in this movement requires between 150 and 200 cars per day. The ore is routed over various railroads to the eastern mills.

AIMÉ to Meet at Norman, Oklahoma, Oct. 17-20

The American Institute of Mining and Metallurgical Engineers, Industrial Minerals Division, will hold its regional meeting at Norman, Oklahoma, on October 17, 18, 19 and 20, 1950.

Details of the meeting are as follows:

Technical sessions will be held at the University of Oklahoma Extension Study Center, North Campus, on October 17 and 18, and the banquet will be held there on October 17. Among papers to be presented are *Geology and Industrial Minerals of Oklahoma*, by Robert H. Dott, director of the Oklahoma Geological Survey; *Titaniferous Magnetite in Basic Rocks of Wichita Mountains, Oklahoma*, by Gerald W. Chase of the Survey; *Geology and Utilization of the Titaniferous Magnetites at McIntyre Development, Tehavus, New York*, by George W. Wunder and Paul W. Allen, National Lead Company; *Barite Production in Missouri*, by Garrett A. Mullenberg. A discussion of the titanium papers will be held by men familiar with the occurrence of ilmenite deposits.

Field trips will be held on October 19 and 20 in the Arbuckle Mountains, south-central Oklahoma. The first day will be devoted to inspection of

industrial mineral deposits and operating plants, including glass sand, dolomite, cement materials, asphaltic rock, and crushed stone. The second day will be spent on stratigraphic and structural features in lower Paleozoic sedimentary rocks of the central and western Arbuckle Mountains.



A new phosphorus processing plant will be built by the Food Machinery and Chemical Corporation at Lawrence, Kansas, according to an announcement from the Westvaco chemical division. Another furnace will be built at Pocatello, Idaho.

On the Rex Mining Company land near Joplin, Missouri, lead ore is being mined from shallow depths in the old "Thousand-Acre Tract." Engaged in the work are four groups of lessees, Leo Young and associates, Walker & Company, Frank Dale and associates, and Bud Chambers and associates. Chambers struck a lead deposit 10 feet below the surface and estimates that the occurrence extends at least to a 20-foot depth. All the ore is coming from previously unmined areas. The Young brothers also are mining zinc from a drift off the Rex company's 70-foot shaft.

Carl McDonald and associates are drilling some interesting holes in the old Lehigh district about six miles west of Joplin, Missouri. This district, the location of the famed old Moler-Smith open-cut mine, was a large producer in the 1900's and is noted for its rich shallow deposits in soft ground, easily worked by open-cut methods. McDonald's lease consists of some 600 acres of ground joining the Moler-Smith mine on the west. He is using two drills and reports cutting values at a depth of 70 feet.

Mike Evans, veteran mine operator, is drilling near Alba, Missouri, where he has 1,000 acres of land under lease. He has several holes down which have penetrated a zinc ore deposit 35 feet thick at a depth from 150 to 185 feet. The property adjoins the West Side mine, which was operated about 30 years ago. Evans also has been operating the Short Horn and Tom L. leases adjoining the Bilharz Mining Company's Blue Bird mine, southwest of Cardin, Oklahoma. The ore from these mines is shipped to the Eagle

Picher Mining and Smelting Company's mill at Commerce, Oklahoma.

Core-drilling of the pitchblende showing in Baraga County, Michigan, found by Jones & Laughlin Steel Corporation, has begun. The company's Ishpeming office released the information that the drilling contract has been awarded to the E. J. Long-year Company of Minneapolis for the work. The deposit is on state land which has been leased to the mining company.



The new heavy media plant at the Inter-State Iron Company's Grant mine, Buhl, Minnesota, is now working well. It was designed to treat a layer of ore at the bottom of the Grant pit which is partly decomposed and too high in silica content to be shipped direct. The sandy rock layers are too solid to permit washing in a straight washing plant. During the first two days of operation the silica was reduced from 21 percent to 10 percent in the concentrates. Another new heavy media unit in Inter-State's Hill - Annex washing plant was turned over in the latter part of July and began handling ore from the pit on August 1.

The Holland mine at Biwabik, Minnesota, idle since 1918 when it was operated by the Holland Mining Company, has been leased by Associated Builders of Virginia, and preparations are being made to reopen the property. A total of 322,558 tons was shipped from the mine between 1905 and 1918. The Holland is another "exhausted" mine that is taking on new life.

Pickands Mather & Company's Danube mine at Bovey, Minnesota, is now a truck and belt conveyor operation, the belt having been completed this season. Locomotives are used to haul trains from the belt discharge pocket to the washing plant as at some other western Mesabi Range mines.

Stripping at the Inter-State Iron Company's Schley mine at Gilbert, Minnesota, is now down to ore in some small areas and is being pushed. The Pettit, which adjoins the Schley, will be developed in the near future. Approximately 2,500,000 tons have been shipped from the Pettit, with about 3,500,000 tons remaining, according to estimates. It was last oper-

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ated by the Republic Steel Company in 1923.

Michigan mines have resumed shipments of iron ore to steel mills at Birmingham, Alabama, and about 25 carloads of iron ore are said to be leaving the North Western Railroad's yards every day. A building boom in the south, creating a demand for cast iron pipe, was reported to be the reason for the orders for more ore.

The Stanley Mining Company, Bixak, Minnesota, of which Patrick Butler is president and F. S. Bergstrom vice-president, is shipping from its heavy media plant at the Mary Ellen mine. The crude ore, a banded taconite, runs from 38 percent to 40 percent iron and the concentrates have a 53 percent natural iron with a good recovery. A total of 300,748 tons was shipped in 1949 and about 1,000,000 tons of concentrates has been shipped from the mine up to this season. Emmett Butler is chairman of the board.

At the Morton mine of the M. A. Hanna Company, Hibbing, Minnesota, about 1,000,000 cubic yards of stripping have now been removed. The mine which, because of its heavy surface overburden, was considered one of the most likely to remain an underground operation, has become a real openpit in appearance. It is even more difficult as a stripping job than was the South Agnew, because there was practically no caved ground to help drain the large amount of ground water from the overburden before stripping began.

The Cleveland-Cliffs Iron Company is operating all of its Michigan mines on a five days per week schedule. The M. A. Hanna Company mines in Iron County are operating on a six days per week schedule. Inland Steel Company's Sherwood and Bristol mines and Republic Steel Corporation's Tobin mine are on a five days per week schedule.

The first shipment of taconite pellets has been sent by Pickands Mather & Company, Aurora, Minnesota, to the Youngstown Sheet & Tube Company, Youngstown, Ohio. The latter probably will use the pellets in making steel at its Campbell plant.

In the last week of July, 2,905,141 gross tons of iron ore were shipped down the Lakes, compared to 2,816,479 tons the previous week. The season's shipments totaled 33,959,838 tons at the end of July, nearly 12,000,000 tons less than last year in the same period. Bethlehem Steel Corporation is said to have stopped moving coal by ship to Lackawanna in order to use the ships for iron ore. The goal for the year is 75,000,000 tons of ore. The 1948 shipments amounted to 83,000,000.

In order to minimize the amount of water that must be collected and pumped from underground, the M. A. Hanna Company at its Homer mine, Iron River, Michigan, is pumping

with 14 deep-well pumps located on the surface. To scalp off as much surface water as possible before it reaches and hampers underground operations is believed an economy. The wells are from 85 feet to 229 feet deep, and a total of about 6,700 gpm. is discharged from them, as compared to 650 gpm. by underground pumps.

The 1949 report of the St. Louis County, Minnesota, Inspector of Mines, A. F. Benson, shows 94 mines in operation with 130 inactive. Total employment was 9,689, and the total ore shipments were 42,406,528 tons. Stripping removed amounted to 52,674,642 cu. yds. Mr. Benson reports that total ore and stripping would make a total of 74,000,000 cu. yds.—"an all-time high, not only in St. Louis County, but possibly in the world on projects of a similar type." He gives the average annual movement of dirt on the Panama Canal as 24,500,000 cu. yds. as a comparison. Fatalities, per 1,000 men employed, were 1.383. Average hourly wage rates ranged from \$1.23 for common labor to \$2.005 for shovel operators.

The North Range Mining Company is diamond drilling from lower levels of the Warner mine near Amasa, Michigan. North Range acquired the mine in October, 1948, and has since dewatered it for examination and exploratory drilling.

The Jones & Laughlin Ore Company will soon begin sinking a shaft

at a new underground mine to be called the Tracy mine. The property is located at Negaunee, Michigan, on the Marquette Range. Shaft sinking is expected to begin this fall and first ore shipments are planned for 1954. Within 10 years the company anticipates that the Tracy mine will have attained a production of 1,000,000 tons annually.

Pickands Mather & Company is developing the Berkshire shaft at Caspian, Michigan, as a future central hoisting shaft for ore from the adjacent Buck group, which includes the Buck, Balte, Fogarty and Berkshire properties, all connected underground. The Berkshire surface plant will be restored, new stock-pile grounds provided, and a new haulage level developed. A long range plan such as this has involved a great amount of study in regard to comparative costs of longer underground hauls to a central shaft as against shorter hauls at the expense of more hoisting shafts with their accompanying surface buildings and additional labor, both on surface and underground.

A contract has been awarded to Associated Builders of Hibbing, Minnesota, for placing the foundations for a shop, office building and seven houses at Oglebay Norton & Company's St. James mine, Aurora, Minnesota. Mining equipment, including shovels and trucks, are expected soon.



INSIDE JOPLIN—ZINC IS MINED, MILLED

The mill building, ramp, and hopper appear in this picture of the Linda M. Mining Company's Manning mill located inside the city of Joplin, Missouri. The mill also is equipped with a 16-inch crusher, 30-inch crushing rolls, 24-inch regrounding rolls, a rougher jig, four 42 by 48-inch cells, a six-cell cleaner jig with 56 by 42-inch cells, and two Buchart tables. The plant will treat 125 tons of ore in 10 hours, and the company does custom milling in addition to treating its own ores. A feature of the mill worthy of special note is that the truck ramp, 27 feet high, was constructed mainly of tailings at a far lower cost than if lumber had been used. The mine, located about four miles from the mill, was diamond drilled several years ago by Carl McDonald. He put down eight holes, each from 65 to 70 feet deep, and all were reported to have found zinc-bearing ore. Only one of the 13 acres in the tract were prospected during this drilling campaign, so values may exist throughout the rest of the property. The company is headed by A. R. Stewart, Paul Southworth and associates.

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Openpit Project Started By Consolidated Copper

Consolidated Coppermines Corporation has engaged Isbell Construction Company of Reno, Nevada, to strip and mine by openpit methods about 3,000,000 tons of copper ore at Kimberly, Nevada. Operations began in August.

The new pit is being excavated on the south slope of Old Glory Hill, southwest of Kimberly and adjacent to the company's Morris mine. Part of the area previously was worked by underground methods.

International Mining Days To Be Held Oct. 12-14

The Annual International Mining Days celebration sponsored by El Paso, Texas, is being planned for October 12-14, under the direction of

the El Paso Chamber of Commerce. R. S. Beard of the Chamber is heading the special International Mining Days Committee.

The celebration will be held in conjunction with the regional meeting of the AIME, Industrial Minerals Division, of which Jack C. Pierce of Albuquerque, New Mexico, is secretary.

About 3,500 mining people in the southwest and Mexico will receive invitations. The agenda includes technical sessions held during the three days by the Industrial Minerals Division of the AIME, which will present six technical papers, a banquet on October 12 held by the El Paso Metals Section of the AIME, a Rancheros Breakfast on October 13, a dinner that night for all visiting miners hosted by the El Paso Suppliers, and a football game on Oc-

tober 14 between Texas Western College and the University of Arizona.

New Nevada Firm Opens Custom Mill; Old Mines

The San Francisco Engineering and Mining Corporation which recently leased the State Line mill at Goldpoint, Nevada, began operating it late in May and is handling 60 tons of custom ore per day, according to John V. Gargan, president. The company installed new machinery, constructed new buildings, and repaired the 14-mile pipe line which supplies water to the plant. Gargan said the plant is running on 'round-the-clock schedule and that custom ore only would be treated.

In an entirely separate operation, the company is preparing to mine silver-lead ore from 35 claims in the Silver Peak district which were purchased late last year. These claims include the Argentite group (also known as the Francia or Sanger), the Lucky Penny and the Mohawk. At the latter a crew is repairing the shaft to the 500-foot level from which a drift will be started. Gargan said that when about a year of development work had been completed on the large tonnage of ore blocked out at the mines, a treatment plant would be erected nearby.

The company was incorporated in Nevada last fall and maintains general offices at 821 Market Street, San Francisco, California. Besides President Gargan, officers include E. L. Brown, vice-president; F. G. Gibson, secretary; and Herman Hornbein, treasurer. Clyde Barcus of Goldfield is plant superintendent.



FIVE ARIZONA MINES REACTIVATED

Development of copper-gold mines in the Cronquist Mining District near Parker, Arizona, has been started by the Associated Mining Company. It has taken long-term leases on the Rio Vista, Billy Mack Sue, Capilano, Mammon, and Lion Hill mines, owned by the Osborne family of Parker and comprised of some 30 claims. The properties will be consolidated into one large operation directed by A. P. Lofquist, mining engineer. A. C. Berger of St. Louis, Missouri, heads Associated. The initial development work will be concentrated on the Rio Vista and Lion Hill Mines. The picture shows the mill building at the Rio Vista, which is the key property in the group. The building is capable of housing a 100-ton plant. Unwatering of the 287-foot double-compartment shaft at the Rio Vista South mine has started, the headframe is being rebuilt, and the shaft repaired and retimbered. New cages, pump, ventilating equipment and air lines will be installed in the shaft and then exploration by core drilling on the 210 level will begin. A new change room is to be constructed and all mine buildings will be modernized with cooling systems and other accommodations, as this camp will be headquarters for all of the company's operations in the district. At the Rio Vista North the 244-foot incline will be extended. At the Lion Hill mine the main adit is to be continued for about 600 feet with several hundred feet of drifts and cross-cuts. At the Capilano additional development work will be done in the 70-foot vertical shaft. At the Sue a new double-compartment shaft will be sunk to avoid flood waters in the old workings. At the Mammon core drilling is planned. A large quantity of machinery already has been moved to the camp; road building and power-line installation are under way. These old mines once were good producers and the Rio Vista particularly has quite a history. However, there has been little activity in them since the beginning of the last war.



At its Trench Unit, American Smelting and Refining Company is milling lead and zinc ore from the Flax mine in its 200-ton flotation mill, Patagonia, Arizona. The company's Trench mine still is closed.

Phelps Dodge Corporation reports that full operation of its New Cornelia Branch smelter at Ajo, Arizona, has begun. Furnaces were first heated in June and testing had been conducted afterwards to reach the final operation stage.

The Sanders mine, one of Arizona's most consistent nonmetallic producers, is shipping over 14,000 tons of bentonite monthly from its open pit

deposit in Apache County. Thirty-three men are employed. Bentonite is used principally for bonding foundry sand, in rotary drilling mud, and in filtering and decolorizing mineral oils. Operations at the Sanders mine are directed by C. A. McCarrell, lessee.

A small group of lessees has taken over the Old Dick group of three claims from the Goodwin Mining Company of Bagdad, Arizona, and is resuming work. They propose to crosscut on the tunnel level. Last summer production from the Old Dick was averaging 500 tons of lead-zinc-copper ore monthly. According to Edgar Kellis, one of the lessees, 600 tons now is being produced monthly.

A discovery of uranium has been reported from the Papago Chief mine, 10 miles north of Sasabe, in southern Pima County, Arizona. The discovery was made by J. Bud Woolsey of Las Vegas, Nevada, and Art Kistler of Monte Bello, California, who recently acquired the long-idle property. Samples were said to have assayed from a trace to as high as 4.3 percent U₃O₈. Woolsey and Kistler have repaired the road to the mine and have a crew of five men clearing out the old workings. Report of their discovery has been made to the Atomic Energy Commission.



Idaho-Maryland Mines Corporation is proceeding with the exploration, development and mining program at its mine at Grass Valley, California. Diamond drilling is continuing on the 2700-foot level, and an old section of the 1500-foot level is being reopened. Now in operation is a new crushing unit in the Idaho mill, and to be installed are a steel head frame and ore bin at the Old Brunswick shaft. The company mills about 20,000 tons of gold ore monthly.

Frank Phillips and Jim Bircham have taken over the old Rossi mine,

2½ miles south of Bishop, California. The mine, which is being retimbered and readied for production, is worked through an inclined, two-compartment shaft. The men plan to use square setting, although there is a possibility of using open stopes in firm ground. Located in the Tungsten Hills district, the Rossi contains soft scheelite ore, now being stockpiled for shipment to the nearby Red Hill mill. The mill, owned by Robert Campbell of Long Beach, California, is operated on a custom basis by Frank Phillips. It is a gravity plant, using Wilfley and Overstrom tables for concentration; concentration is followed by drying, roasting if necessary, and cleaning by magnetic separation.

One of several expansion projects throughout the U. S. and Canada planned by Johns-Manville Corporation will be extensive enlargement of the company's Celite Division at Lompoc, California, where diatomite is mined, according to Lewis H. Brown, chairman of the board. The Celite project will take eight or nine years to complete, he said, and make the handling of several new products possible.

A bill to release 250,000 acres from the Joshua Tree National Monument located in San Bernardino and Riverside Counties, California, has been approved by the House Public Lands Committee at Washington, D. C. The acreage, all of which happens to be within Riverside County, will now be opened to mining.

Fairview Placers is dredging about 7,000 yards a day at its Trinity River properties, California, according to R. M. Hardy, president, and now is in full production. Sunshine Mining Company of Idaho owns a one-third interest in the firm which began working its one dredge last September.

The only quicksilver mine operating on even a small scale at present appears to be one in the Panoche Valley near Hollister, San Benito County, California, owned by Louis Sciocchetti. He reports that he and his associates are producing 25 flasks

a week. The ore is said to be high grade enough to realize a profit in spite of the low price now prevailing.



The Mill Creek Copper Company has allotted \$50,000 for further development of its Mill Creek mine at Mountain City, Nevada, following a copper strike made in a winze from the 380-foot level. The company plans to pump water from the 565-foot level and to raise on the orebody from there. These reports were made by Del E. Smith of Logan, Utah, president, at the recent annual meeting held at Boise, Idaho. Other members of the company are Harry C. Gorby, general manager, Fairfield, Idaho; and William N. Gibb, mine superintendent, Mountain City.

Remodeling of the War Eagle mill, Manhattan, Nevada, has been started by Mark Bradshaw, owner, who intends to commence treating his own and custom ore from the Manhattan area. The mill has a capacity of 100 tons daily and is a cyaniding unit. Bradshaw is said to be installing quite a lot of new equipment.



A new chemical plant is being constructed by the Potash Company of America at Dumas, Texas, under contract with the Stearns-Roger Manufacturing Company of Denver. The plant is expected to cost \$750,000 and to be completed the first of next year. About 25 to 30 employees will be needed when the plant starts operating, according to F. O. Davis, vice president of PCA. John Nutt will be plant superintendent. He at present is assistant master mechanic at the company's Carlsbad, New Mexico, mine, from which potash will be shipped to Dumas.

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J. D. Christian Engineers, of San Francisco, California, is now producing the Power Package Terminal, a belt-conveyor head drive in which the driving motor and the gear-reduction unit are enclosed within the pulley cylinder; it is a non-rotating assembly of an electric motor which drives the pulley cylinder

through either a helical or a herringbone gear transmission.

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Christian lists as advantages of the PPT: 30 percent saving of installed cost; 60 percent reduction in weight; space requirement of approximately 50 percent; and dust tightness, water tightness, permanent alignment, splash lubrication, and installation on the conveyor frame. Illustrated brochure No. 402 is available on request from MINING WORLD.

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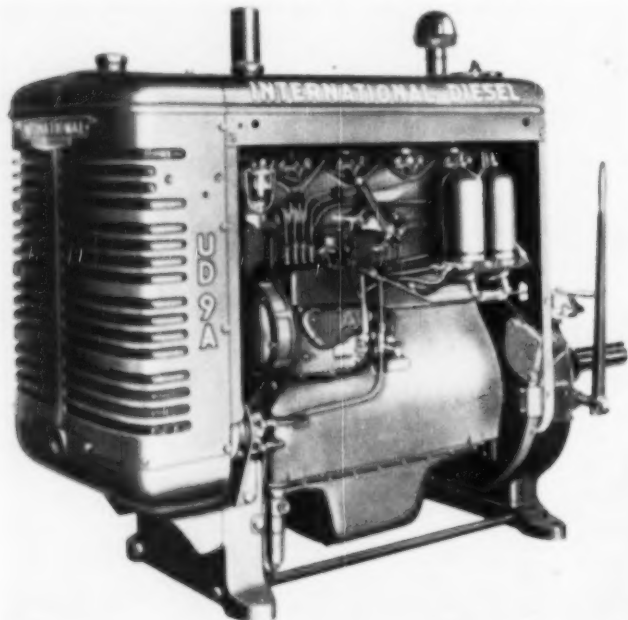
Increased-horsepower, improved-performance diesel power units and automotive engines of the four-cylinder International "9" series, are now available in new UD-9A models, International Harvester Company has announced.

Engineering design changes which accomplish greater power output, smoother operation and longer service life of parts, have been made in both the UD-9A automotive engine for motor graders and other self-

propelled machines and the UD-9A power unit for a wide variety of stationary installations in many industries.

New features of the basic "9" engine include: redesigned precombustion chamber and piston; the "A" series I-H fuel injection pump; simplified injection nozzles; counter-balanced crankshaft and new connecting rods. The improvements establish a higher compression ratio, 15.7 to 1 compared to the former 14.4 to 1, and greater burning efficiency with corresponding increase in working horsepower per unit of fuel consumed.

International Harvester's complete UD-9A power unit which delivers 62.5 hp. at 1600 rpm. under intermittent load. Maximum torque is 733 pound-feet at 800 rpm.



New Speed Control Proves Economical and Efficient

An economical and efficient form of speed control recently developed by Allis-Chalmers engineers for applications requiring frequent speed changes or for making adjustments without shutting down the drive is now being employed for the first time in various mines.

The combination consists of a new Vari-Pitch automatic sheave, companion sheave, wide-range Texrope belts and Texslide motor base. It assures easier and smoother starting and is being used for motion control speed change ratios up to 2 to 1.

Desired speed variances of the driven machine are quickly obtained by simply turning the adjusting screw on the Texslide motor base with any commercial wrench. The adjustment is only a matter of seconds compared to 10 to 15 minutes required to vary the speed of a stationary control sheave, users say.

Improved Conveyor Idlers Subject of New Bulletin

New information on troughing idlers and return idlers of improved design which eliminate "high-speed rattle" and reduce maintenance costs is available in two new folders just issued by The Conveyor Co. of Los Angeles, California.

Covered in the pamphlets are features of the new "snug" design and its application to permanently lubricated ball-bearing type idlers and roller-bearing idlers. Each type troughing idler is designed for specific fields of use. Applications of these improved idlers varies from sanitary food handling to rugged operations in mines, smelters, pits, and quarries, etc. Manufacturer will advise on models best suited to any unusual conditions. For copies write to The Conveyor Co., 3260 E. Slauson Avenue, Los Angeles 58, Calif. or to MINING WORLD, 121 Second Street, San Francisco, Calif.

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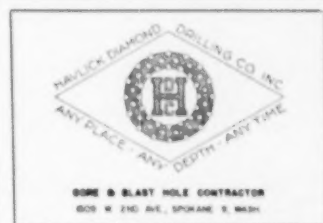
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Bemis Shares in College-Business Exchange

Bemis Bro. Bag Co. has granted two fellowships for the study of its company organization and operation under a national program designed to encourage an exchange of information between college staff members and businessmen. The fellowships were granted through cooperation with The Foundation for Economic Education, Inc., which established and directs the College-Business Exchange Program.

Under this program, fellowships are offered to college teachers for a six-week summer period during which they make an intensive study of a business firm. Since many teachers move directly from their own academic training into the teaching profession without first-hand experience in business, it is felt that this study will be mutually valuable in creating better understanding between teachers and businessmen. It offers the teachers an opportunity to become more proficient and effective in their academic work, and it acquaints the businessmen with problems faced in the classroom. Holders of the fellowships usually have special interests and concentrate their work in certain fields, such as the problems of pricing, personnel, market research, advertising or production.

Geiger Counters Prospect From Light Aircraft

A Geiger-Mueller Counter specifically designed for installation in light aircraft suitable for uranium prospecting has just been put on the commercial market by The Radiac Company of 489 Fifth Avenue, New York City. The "Prospectometer," listed as Model 103, is a Geiger-Mueller Count Rate Meter with an audible warning signal which is heard whenever the radiation intensity increases above a level chosen by the operator. The signal increases in frequency as the intensity continues to increase. It operates on 6, 12, or 24 volts and requires approximately 50 watts.

The instrument has been supplied on a custom basis in the past, and installation was made at a local airport. Due to increased interest in it, brought about perhaps by its successful use in Colorado, Utah and Ontario, a standard model has been developed which will be suitable for practically all applications. Orders are now being accepted for delivery in 90 days. Price is \$750.

Radiac also announces the "Prospectoscope," Model 105-C, quoted at \$325, which is specifically designed to make quantitative measurements of low-intensity fields of gamma radiation. Sensitivity of this model is approximately 30 times as great as ordinary counters, due to its large

GM tube and moderately long time constant. Five range factors (1, 2, 3, 10 and 20) allow the Prospektoscope to measure wide variation of radiation intensity with easy readability. Normal background produces a deflection of two-thirds of full scale on the first range. Headphones are provided for use in planes, trucks and other noisy locations.

These instruments very adequately meet the need for airborne and carbome radioactivity detection instruments which was expressed by Phillip L. Merritt, of the United States Atomic Energy Commission before the Annual General Meeting of the Canadian Institute of Mining and Metallurgy on April 18, 1950. Write to MINING WORLD, 121 Second St., San Francisco, Calif., for further information.

Manufacturers Personals

A. G. HENDRICKSON is the newly appointed assistant sales manager of the Welding Division of Harnischfeger Corp. of Milwaukee. Mr. Hendrickson is assistant to Melvin O. Monsler, recently appointed sales manager.

REX D. GLASSCOCK, with many years of direct experience for General Motors Corporation, has joined the Seattle sales staff of Yukon Equipment Co. JACK MINER, formerly of the purchasing department, has also joined the company's sales staff.

RAY RODOLF has been introduced by Le Roi Company as its special sales representative in construction and mining equipment to major contractors and mining operations. Located in Arcadia, California, he will carry out his services to these firms all over the country. This appointment is part of Le Roi Company's intensified sales and service program to establish closer contact with users of Le Roi construction and mining equipment.



DOUGLAS E. NEWTON has been appointed general sales manager in charge of sales and sales promotion for Denver Equipment Company. Newton joined Denver Equipment Company in 1939, and has worked in various divisions of the company.

A. T. AGERN has been promoted to district representative of Caterpillar Tractor Company, with headquarters in Pendleton, Oregon. C. K. HEDGES has been named district representative at Salt Lake City, Utah. E. A. TIARKS, former district representative at Salt Lake City, has been transferred to Seattle, Washington, where he will be assisted by R. M. RICHARDS, Portland, Oregon, who has been promoted from agricultural representative. H. A. MANUEL, former district representative, Portland, has been transferred to Fresno, California.

WALTHER H. FELDMANN has been named vice-president in charge of sales for Worthington Pump and Machinery Corporation; Feldmann was formerly president of Electric Machinery Mfg. Co. of Minneapolis, a Worthington subsidiary. At the same time, JOHN J. SUMMERSBY became vice-president in charge of purchases; FREDERIC W. THOMAS became general manager of purchases, and CARLETON REYNELL became general representative of the sales and purchasing departments. TRUMAN SAGE has become head of the Machinery Division, Northern Commercial Company, and will make his headquarters at the company's main office, 419 Colman Bldg., Seattle, Washington.

F. S. NICKERSON was elected vice-president of Mack-International Motor Truck Corporation and was appointed manager of the company's Central Division Sales territory; Nickerson will make his headquarters in Mack's Chicago office.

L. J. LANGE has been appointed industrial power product specialist for International Harvester Company, succeeding S. L. Siegfried. His duties will be concerned with the design and sale of industrial wheel and crawler tractors and of power units.

E. D. POWERS was recently elected vice-president of American Cyanamid Company; he will be in general charge of all matters concerning plant operations.

GERALD F. TWIST was elected a vice-president of Food Machinery and Chemical Corporation at a Board of Directors meeting held recently. Twist is manager of the company's Peerless Pump Division.

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ANALYTICAL CHEMISTS, ign.	\$300 U. S., \$215
CHEM. ENGR, control lab.	\$250
ASSAYER-CHEMIST	\$300
MECH. ENGR, tool design	OPEN
MECH. ENGR, indust. instruments	OPEN
ELECT. FOREMAN E. E., ign.	\$400
ELECT. OFFICE ENGR., E. E., ign.	\$350
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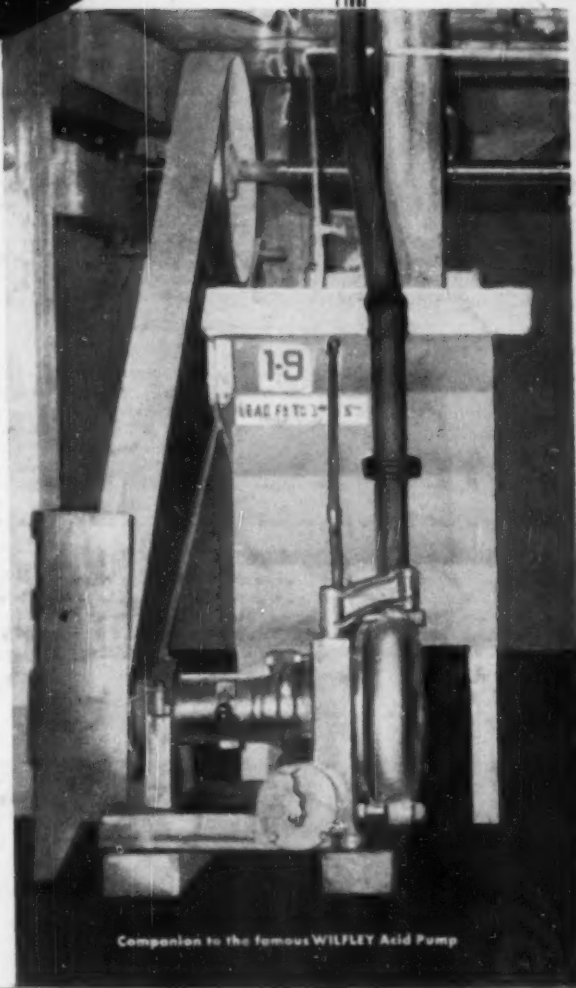
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